

**THE EFFECTIVENESS OF WILDLIFE LAW ENFORCEMENT IN AND
AROUND BADINGILO NATIONAL PARK, SOUTH SUDAN**

BY

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DECLARATION

Declaration by the Student

This research thesis is my own original work presented to University of Eldoret. The work has not been presented for a degree or any other award in any other University or institution of learning.

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This research project has been submitted for examination with our approval as University supervisors.

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DEDICATION

This thesis is dedicated first to God for the strength he gave me to carry it through to completion. I also dedicate it to my family, especially my wife Sara Felix for her assistance and encouragement throughout the period of undertaking the field work.

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ABSTRACT

Wildlife Law Enforcement plays a vital role in the conservation of biological diversity by ensuring that species are protected. However, South Sudan does not have elaborate and comprehensive wildlife policies and laws to assist in the enforcement of existing laws. Despite the existence of the Wildlife Act, the country has witnessed an escalation in crime targeting biological resources that has led to the decline or extinction of some species. These activities have usually gone on covertly such that many wildlife violations go undetected, unreported, and not prosecuted in any court of law. This study was conducted in Badingilo National Park in South Sudan, between January and April 2012. The main objective of the study was to assess the challenges of wildlife law enforcement and their effects on wildlife conservation in Badingilo National Park. The specific objectives of the study sought to; identify the challenges facing wildlife law enforcement; determine the causes and effects of the challenges faced in enforcing wildlife laws; and to determine the anti-poaching measures to mitigate effects of challenges of wildlife law enforcement in Badingilo National Park. Data was collected using questionnaires, visual observations, focus group discussions, informal talks and key informant interviews. Data was analyzed using the Statistical Package for Social Science (SPSS), and results are presented using tables. Chi-Square test was used to test the hypotheses. Results indicated that poaching, poverty, negative attitude towards conservation, lack of alternative livelihood resources and increase in human population are the major factors contributing to illegal activities in the park. The major challenges faced by the officers when enforcing wildlife laws include inadequate number of vehicles and equipments, inadequate staff and political interference. The study concluded that many factors have made the enforcement of wildlife laws difficult although the most conspicuous ones are the effects of poverty, negative attitude towards conservation, lack of alternative resources and increase in population. These effects not only increased the level of poaching, but also halted significantly major management activities in the park. There is neither a wildlife education programme for the area nor any communication programmes and relevant facilities which have been set up. There is also change in habitat due to increased dependence of the community on the park, particularly the cutting of grass and timber. Thus there is need to develop comprehensive natural resources conservation programs and strategies that take into consideration views of the community as well as other important stakeholders, for example, community participation in conservation of wildlife resources.

TABLE OF CONTENTS

DECLARATION.....	i
DEDICATION	ii
ACKNOWLEDGEMENT	iv
ABSTRACT.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES	ix
DEFINITION OF OPERATIONAL TERMS.....	xi
LIST OF ACRONYMS	xii
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background Information	1
1.2 Problem Statement.....	4
1.3 General objective	5
1.3.1 Specific objectives	5
1.4 Justification of the Study.....	5
1.5 Significance of the Study	6
1.6 Scope of the Study	6
1.7 Hypotheses	7
1.8 Research Questions.....	7
CHAPTER TWO.....	8
LITERATURE REVIEW	8
2.1 International Legal Instruments Relating to Sustainable Wildlife Management	8
2.1.1 Global Agreements	8
2.1.2 Regional Agreements.....	12
2.3 History of wildlife management in South Sudan	15
2.4 Periods of Civil War in South Sudan and their Implications on Wildlife.....	18
2.5 Policy and Legislative Context Pertaining to Wildlife Conservation in South Sudan.....	19
2.5.1 Legislation Concerned With Land-Use Planning and Development.....	19
2.5.2 Legislative Framework for Broad Environmental Management.....	20
2.5.3 Legislation concerned with Wildlife Conservation and Management, Creation and Management of Protected Areas, and Tourism Development.....	20
2.5.4 The role of the Anti-poaching, Informer, and Park Management departments	21
2.6 Institution of South-Sudan Wildlife Conservation Authority	23
2.7 Current Situation of Wildlife Resources in South Sudan	23
2.7.1 Causes of Threats to Wildlife and Protected Areas	25
2.7.2 Rigid Management Approach.....	27
2.7.3 Wildlife outside Protected areas	28
2.7.4 Conceptual Framework	28
CHAPTER THREE.....	30
MATERIALS AND METHODS	30
3.1 Study Area.....	30
3.1.1 Location.....	30
3.1.2 Topography, Geology and Soils	31
3.1.3 Climate.....	31
3.1.4 Fauna and Flora	31

3.1.5 The Surrounding Community.....	32
3.2 Research and Sampling Design	34
3.3 Target Population	34
3.4 Data Collection Techniques	34
3.4.1 Questionnaires	34
3.4.2 Focus group discussions.....	35
3.4.3 Direct Observation.....	35
3.4.4 Informal Talks	36
3.4.5 Key Informant Interviews	36
3.5 Materials	36
3.6 Data Analysis and Presentation Techniques	37
CHAPTER FOUR	38
RESULTS	38
4.1 Response Rate from Respondents	38
4.2 Demographic Information.....	38
4.2.2 Designation/Rank and Duty allocation of Wildlife Law Enforcement Staff	39
4.2.3 Length of Service and Education Level of the Personnel in the Park	40
4.3 Reasons for establishment of Badingilo National Park	42
4.4 Perception of different staff categories on occurrence of illegal activities	42
4.5 Challenges faced in enforcing wildlife laws in BNP.....	43
4.6 Causes of challenges facing wildlife law enforcement in Badingilo National Park.....	45
4.7 Proposed Anti-Poaching Measures to mitigate the effect of challenges in Wildlife Law Enforcement in BNP	47
4.7.1 Anti-Poaching Measures wildlife law enforcement in BNP	49
4.8 Involvement of the Local Community in the Management of Badingilo National Park	49
4.9 Reasons for involvement or non-involvement of police in enforcing the wildlife law in BNP	50
CHAPTER FIVE	52
DISCUSSION	52
5.1 Reasons for the establishment of Badingilo National Park.....	52
5.2 Perception of park management staff on occurrence of illegal activities in BNP.	52
5.2.1 Encroachment into the Park	53
5.2.2 Views of staff from sampled departments on Poaching and other illegal activities in the Park.....	54
5.3 Challenges faced in enforcing wildlife laws in BNP.....	55
5.3.1 Views of staff from sampled departments on enforcing wildlife laws	57
5.4 Causes of challenges of wildlife law enforcement in Badingilo National Park	57
5.4.1 Views on Poverty and its Implications	58
5.4.2 Local community Attitude toward Conservation	59
5.4.3 Lack of Alternative Livelihood Resources for the Local Community	60
5.4.4 Increasing a Human Population Surrounding Badingilo National Park	60
5.4.5 Civil War	61
5.4.6 Views of Staff from key Park Management.....	61
5.5 Proposed Anti-Poaching Measures to mitigate the effects of challenges of wildlife law enforcement in Badingilo National Park	63
5.5.1 Views of Staff from key Park Management.....	64

5.5.2 Involvement of the Local Community Adjacent to Badingilo National Park	66
5.5.3 Measures taken by People around Badingilo National Park when poachers occur or are seen within the Park.....	66
5.6 Reasons for involvement or non-involvement of police in enforcing wildlife law in BNP	67
5.6.1 Reasons for involvement of Police	67
5.6.2 Reasons for non-involvement of Police	67
CHAPTER SIX.....	70
CONCLUSIONS AND RECOMMENDATIONS.....	69
6.1 Conclusions	69
6.2 Recommendations.....	70
 REFERENCES	 73
APPENDICES.....	79
Appendix I: List of common species of mammals found in Badingilo National Park	79
Appendix II: List of common species of birds found in Badingilo National Park.....	81
Appendix III: List of common tree and shrub species found in Badingilo National Park.....	83
Appendix IV: Results of the local Community adjacent to BNP.....	85
Appendix V: Questionnaire for wildlife law enforcement officers (staff of Badingilo National Park)	87
Appendix VI: Questionnaires for local Community	92
Appendix VII: Photographs taken during the study	94

LIST OF TABLES

Table 4.1:	Designation/Rank and Duties of Wildlife Law Enforcement Staff	40
Table 4.2:	Length of Service and Education level of Wildlife Law Enforcement Staff	41
Table 4.3:	Reasons for establishment of Badingilo National Park.....	40
Table 4.4:	Perception of different staff categories on occurrence of illegal activities in BNP.....	43
Table 4.5:	Challenges faced in enforcing wildlife laws in BNP	45
Table 4.6:	Causes of challenges on wildlife law enforcement in BNP	47
Table 4.7	Proposed Anti-Poaching Measures to mitigate the effects posed by challenges of wildlife law enforcement in BNP	49
Table 4.8:	Reasons for involvement or non involvement of police in enforcing wildlife law in BNP.....	51

LIST OF FIGURES

Figure 1.1:	The Conceptual Framework	27
Figure 2.1:	Map of Badingilo National Park	30
Figure 3.1:	Gender of Respondents Interviewed in and around Badingilo National Park.....	37

DEFINITION OF OPERATIONAL TERMS

- Challenges** - Are factors that become a hindrance in stopping poaching and other illegal activities.
- Enforcement** - To compel obedience to law, regulation, or command
- Game rangers** - Trained personnel employed by the government or community to protect wild animals from poachers.
- Mitigating** - The act of finding a solution or lessening the challenges and Problems being experienced.
- Poachers** - People undertaking illegal killing of wild animals for their livelihood.
- Poaching** - The activity of illegal killing of wild animals for meat, skin or horns as well as the illegal removal of plants.
- Wildlife** - Wild animals and plants not under direct control of man. Also refer to non-domesticated animals and plants
- Wildlife law** - Refers to the laws and/or legal actions that affect the rights, standing and/or welfare of wildlife.

LIST OF ACRONYMS

ACAP	Agreement on the Convention of Albatrosses and Petrel
AEWA	Agreement on the conservation of Africa Eurasian Migratory Waterbirds
AK-47	Automat Kalashnicov-47
APU	Anti-poaching Unit
BNP	Badingilo National Parks
CBD	The Convention on Biological Diversity
CGOS	Central Government of Sudan
CIAT	Crime Impact Assessment Techniques
CITES	The Convention on International Trade in Endangered Species of Wildlife Flora and Fauna
CMS	The Convention on the Conservation of Migratory Species of Wild Animals
CPA	Comprehensive Peace Agreement
CSSS	Council of Southern Sudan States
CWSO	Community Wildlife Service Officers
EIA	Environmental Impact Assessment
FAO	Food and Agricultural Organization
GONU	Government of National Unity
GOS	Government of Sudan
GOSS	Government of Southern Sudan
Ibid	Abbreviation of ibidem meaning information cited from the same source, e.g. books or publications
IIED	International Institute for Environment and Development

IUCN	International Union for Conservation of Nature and Natural Resources
MOU	Memoranda of understanding
MWCT	Ministry of Wildlife Conservation and Tourism
PAs	Protected Areas
RAMSAR	Convention on Wetlands International Importance as Habitat for Migratory Waterfowl
SADC	Southern Africa Development Community
SPLAM	Sudan People's Liberation Army/Movement
SWCET	Secretariat for Wildlife Conservation, Environment and Tourism
TBSS	Total Biodiversity Security Strategies
TEV	Total Economic Value
UNEP	United Nations Environment Programme
VNRC	Village Natural Resources Committee
WC&NPS	Wildlife Conservation and National Parks
WCS	Wildlife Conservation Society
WHC	World Heritage Convention

CHAPTER ONE

INTRODUCTION

1.1 Background Information

The use of laws to protect wildlife has existed for centuries (Simon, 2000). Forestry conservation laws in Babylon date back to 1900 B.C. (*ibid*). In Egypt, King Akhenaten set aside land as a nature reserve in 1370 BC (*ibid*). Emperor Ashoka of India issued a decree which has contemporary ring about nature reserves in the third century BC (Simon, 2000).

The history of enforcing wildlife laws (rules and regulations) in Africa is relatively old. According to Lewis and Carter (1993), “though Africans might not have managed their wildlife resources scientifically in the past, they certainly did it sustainably”. Each Chief had village scouts who made sure that the rules and regulations laid for the management of wildlife were followed; and rules were also established for dealing with violators. This resulted in rigorous protection of the resources, and poachers had no friends.

It is a known fact that every animal and some plants only survive at the expense of other animals or plants, and mankind has gradually become the most significant exploiter of nature of them all. Most urgent problems of conservation of nature are the control of this exploitation and to modify the consequences of the massive increase in the world’s human population (Simon, 2000).

As human population grows, so does poverty and malnutrition increase among local communities. One of the consequences of this poverty is forcing the people living adjacent to protected areas strive to eke out a living from such protected areas. Thus

protected areas, where natural resources still exist, have become a victim of various illegal resource exploitation activities (Jachmann, 1998).

The rising demand for bushmeat in African countries from a burgeoning human population has led to a severe decline in wildlife populations in Africa. Alleviating the impacts of illegal bushmeat trade requires a multidisciplinary and multisectoral approach involving, among others, wildlife law enforcement. Inadequate law enforcement is among the factors driving the unsustainable utilization of bushmeat ((Bushmeatnetwork, 2008). The impact of these illegal activities on the survival of wildlife species underlies the need for strong penalties that reflect the harm caused to be imposed at all levels within the judicial system (Boitani, 1981).

In an endeavor to save the declining wildlife resources from pressure of increasing human population and other human activities, it has necessitated governments to establish law enforcement departments. The aim of these departments is to protect wildlife resources from illegal use thereby maintaining viable wildlife population and high genetic diversity. Wildlife laws have been established in nearly all African countries since the colonial period. These laws have played a role in conservation and protection of wildlife resources both within and outside protected areas (Jachmann, 1998).

In 1994, Sudan People's Liberation Army/Movement (SPLA/M) established a Secretariat for Wildlife Conservation, Environment and Tourism (SWCET). SWCET was vested with the responsibility of wildlife conservation, fisheries management, tourism development and environmental management, among others in the liberated areas under the authority of SPLA/M and also under Wildlife Conservation and National Parks (WC and NPs) Act of 1994. Under WC and NPs Act of 1994, the

Anti-Poaching Unit was established in 1994 and passed by the Sudan People's Liberation Army/Movement (SPLA/M) of South-Sudan. The Anti-poaching officers were mandated to implement the regulations such as entering and searching any land, building, camp, tent, premises, vehicle, aircraft, boat, animal or any other, seize any weapons and equipment that have been used for or possessed in the commission of such offence; seize any animal or trophy that have been taken, traded, imported, exported or possessed in contravention of the law or any regulations, and even make arrests.

The government therefore, recognized that in order to carry out the tasks of wildlife law enforcement effectively, officers were empowered to put on uniforms, carry firearms and arrest and undertake search on matters related to wildlife offences. To do the work promptly and effectively, the uniformed personnel had to have support from other institutions like the Police, Judiciary, Local communities and other stakeholders (partners) (*Wildlife Conservation and National Parks Act, 2003*).

Community participation in policing and protected (park) area management is the approach taken by conservationists to mitigate the shortcomings of the anti-poaching operations. In the past, most communities had been living in harmony with natural or wildlife resources by utilizing them in a sustainable. Way before the arrival of the colonialists who evicted local people from wildlife areas by using the resource preservation approach, Africans lived in harmony with nature and wildlife resources in a sustainable manner (IIED, 1994).

In support of the WC and NPs Act of 1994, South-Sudan has numerous rules and regulations designated to protect the environment and conserve natural resources.

However, the administrative and legislative efforts have not been quite successful (Leew de, *et al.*, 2001).

For a healthy wildlife population, either as stable or increasing population, serious management issues must be addressed including training of personnel, fire management plan, illegal encroachment, research and constant evaluation on the species populations (Jamus, 2006). Consequently, putting in place wildlife conservation, management and protection rules in place is key to promoting the security of protected areas and their resources (among them wildlife), stamping out poaching and other illegal activities, and promoting co-existence between human and wildlife.

1.2 Problem Statement

Wildlife Law Enforcement plays a vital role in the conservation of biological diversity by ensuring that they are protected. Several countries that neighbor South Sudan have elaborate and comprehensive wildlife policies, which have in turn been used to draft the accompanying legislation and strategic plan to guide implementation. Although at the moment South Sudan neither has a wildlife policy nor a wildlife strategic plan, it does however have a wildlife law embodied in *the Wildlife Conservation and National Parks Act, 2003*. Unfortunately, so much has changed over the relatively short period the Act has been in operation that it needs to be revised. Furthermore, the law was enacted without an elaborate policy as a guide (*Wildlife Conservation and National Parks Act, 2003*).

Despite the existence of the Wildlife Act, the last decade witnessed an escalation in crime targeting biological resources and this has led to the decline or extinction of some species. These activities have usually gone on covertly such that many wildlife

violations go undetected, unreported, and not prosecuted in any court of law. It is a situation that needs to be examined with a view to assessing the weaknesses in the law enforcement system and how this can be improved. This study aimed at doing this with a view to proposing measures that can be put in place to promote sound wildlife management within and around the BNP.

1.3 General objective

To assess the challenges of wildlife law enforcement and their effects on wildlife conservation in Badingilo National Park, South Sudan.

1.3.1 Specific objectives

- (i) To identify the challenges facing wildlife law enforcement in and around Badingilo National Park.
- (ii) To determine the causes and effects of the challenges faced in enforcing wildlife laws in and around Badingilo National Park.
- (iii) To determine the anti – poaching measures needed to mitigate effects of challenges of wildlife law enforcement in and around Badingilo National Park.

1.4 Justification of the Study

Effective law enforcement cannot be achieved without proper and comprehensive research to generate total biodiversity security strategies (TBSS). Literature on the challenges of wildlife law enforcement in South Sudan is scanty. There is no comprehensive research that has been done on TBSS, except on a few individual species excluding their habitat, public involvement, as well as NGOs and other

Government arms like the Police, Army and court of Law (Warchol, et al., 2003). Hence this study is timely and its finding and recommendations may have far reaching implications on how wildlife is managed, conserved and protected in South Sudan.

It was therefore, important to conduct this study to ascertain the challenges facing wildlife law enforcement in South-Sudan so as to come up with recommendations on how to develop mitigation measures that would secure the remaining wildlife resources.

1.5 Significance of the Study

That wildlife and other natural resources are critical to the economy of South Sudan cannot be overemphasized. Consequently, there is need to determine the factors leading to the diminishing wildlife population in South Sudan as well as the challenges faced in wildlife law enforcement. The wildlife tourism sector in South Sudan has been dormant due to the conflicts and war that have ravaged the country. It is high time the Tourism Marketing Board promoted visitation to the country by international tourists. This research is geared towards identifying challenges in wildlife law enforcement with the aim of suggesting measures that would mitigate the effect of factors that have led to the decimation of wildlife such as poaching. It is envisaged that the results would lead to an increase in effective control of poaching of large wildlife populations and an increase in tourism activities.

1.6 Scope of the Study

The study was conducted in and around Badingilo National Park and its environs in South Sudan. The Park is one of the protected areas (PAs) frequently attacked by poachers in the country. The scope of the study was mainly to find out what the

managers of BNP and the surrounding community have to say regarding the effectiveness of wildlife law enforcement in BNP.

1.7 Hypotheses

H₀: There are no significant challenges faced in enforcing wildlife laws in and around Badingilo National Park

H_A: There are significant challenges faced in enforcing wildlife laws in and around Badingilo National Park.

1.8 Research Questions

- (i) What are the challenges facing wildlife law enforcement in Badingilo National Park?
- (ii) What are the causes and effects of challenges faced in wildlife law enforcement in Badingilo National Park?
- (iii) Have anti-poaching operations and community participation in wildlife management been effective in reducing poaching activities in Badingilo National Park?

CHAPTER TWO

LITERATURE REVIEW

2.1 International Legal Instruments Relating to Sustainable Wildlife Management

2.1.1 Global Agreements

Wildlife management has long been regulated at the international level. Initially this was implemented through a focus on the protection of certain species or wildlife habitats. More recently, the focus has shifted to more comprehensive approaches, epitomized by the innovative features of the Convention on Biological Diversity (CBD). All the international legally binding agreements are of key importance for the review and drafting of effective national legislation on sustainable wildlife management, either because they pose limits to the sovereignty of countries in regulating wildlife use and protection, or because they call for the operationalization of specific principles, methods and processes for the management, protection and use of wildlife (Birnie and Boyle, 2002a).

Among the species-based conventions, the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES, 1973), protects species by restricting and regulating their international trade through export permit systems. For species threatened with extinction which are or may be affected by trade (listed in Appendix I of the Convention) protects endangered species, and export permits may be granted only in exceptional circumstances and subject to strict requirements. The importation of these species also requires a permit, while trade for primarily commercial purposes is not allowed. For species which may become endangered if their trade is not subject to strict regulation (listed in Appendix II), export permits

including those for commercial trade may only be granted if export is not detrimental to the survival of that species and if other requirements are met. A third list concerns species subject to national regulation and requiring international co-operation for trade control (listed in Appendix III). In this case, export permits may be granted for specimens not obtained illegally. Basically, the Convention requires States to adopt legislation that:

- Designates at least one Management Authority and one Scientific Authority
- Prohibits trade in specimens in violation of the Convention
- Penalizes such trade and
- Calls for the confiscation of specimens illegally traded or possessed.

International and regional co-operation is an important conservation tool. There are a number of opportunities to implement important aspects of the Wildlife Policy through regional and international co-operation. Currently, the draft Wildlife Policy of the South Sudan has not been adopted by Legislative Assembly.

The Convention on the Conservation of Migratory Species of Wild Animals (CMS, 1979) aims to conserve terrestrial, marine and avian migratory species throughout their range, thus requiring cooperation among "range" states host to migratory species regularly crossing international boundaries (Lyster,1989b). With regard to those species considered endangered (listed in Appendix I), states must conserve and restore their habitats; prevent, remove or minimize impediments to their migration; prevent, reduce and control factors endangering them; and prohibit their taking. With regard to other species that have an unfavourable conservation status (listed in Appendix II), range states undertake to conclude global or regional agreements to maintain or restore concerned species in a favourable conservation status. These agreements may

range from legally binding treaties (called Agreements) to less formal instruments such as Memoranda of Understanding (MoU), and can be adapted to the requirements of particular regions. With regard to the latter, those agreements include the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA, 1995) and the Agreement on the Conservation of Albatrosses and Petrels (ACAP, 2001). The above agreements have no effects on South Sudan wildlife conservation, since South Sudan had not signed any international treaties.

Among the area-based conventions, the Ramsar Convention calls upon Parties to designate wetlands in their territory for inclusion in a List of Wetlands of International Importance (Navid, 1989). The Convention further requires parties to promote the conservation and wise use of the designated wetlands, for example, by establishing nature reserves. The concept of “wise use” does not forbid or regulate the taking of species for any purpose; however, such use must not affect the ecological characteristics of wetlands (Birnie and Boyle, 2002a). The World Heritage Convention (WHC) provides for the identification and conservation of sites of outstanding universal value from a natural or cultural point of view, which are included in the World Heritage List. Natural habitats may include areas that constitute the habitat of threatened species of animals of outstanding universal value from the point of view of science or conservation (Simmonds, 1997). Parties to the Convention must adopt protective policies, create management services for conservation and take appropriate measures to remove threats (Simmonds, 1997).

Among the international commitments of a more general nature calling for the operationalization of broad principles, methods and processes is the Convention on Biological Diversity (CBD, 1992). The CBD has three objectives, which include the

conservation and sustainable use of biodiversity components including wildlife, as well as the fair and equitable sharing of the benefits arising from the utilization of genetic resources (article 1 of CBD). Sustainable use is defined as using biodiversity components in a way and at a rate that does not lead to the long-term decline of biological diversity, thus meeting the needs and aspirations of present and future generations (Birnie and Boyle, 2002a). This concept is particularly relevant for the sustainable management of wildlife as it entails, at a minimum, that countries monitor use, manage resources on a flexible basis, and adopt a holistic approach and base measures on scientific research (Birnie and Boyle, 2002a). The main obligations of the CBD have a bearing on national wildlife legislation including adopting specific strategies, plans and programmes on biodiversity conservation and sustainable use and incorporating relevant concerns into any plans, programmes and policies. The CBD (i) obligates sustainable use of biodiversity as a consideration in national decision making, (ii) calls for establishing a system of protected areas, rehabilitating and restoring degraded ecosystems and promoting the recovery of threatened species (iii) requires identifying and controlling all potential sources of adverse impacts on biodiversity, and carrying out environmental impact assessments of projects likely to have "significant adverse effects" on biological diversity (iv) promotes conserving animals outside their natural habitats ("ex-situ conservation"), such as in zoos and parks, with a focus on facilitating recovery and rehabilitation of threatened species and reintroducing them into their natural habitats under appropriate conditions, while at the same time avoiding threatening ecosystems and in-situ populations of species (v) protecting and encouraging customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements, (vi) supporting local populations to develop and implement

remedial action in degraded areas, (vii) encouraging cooperation between governmental authorities and the private sector in developing methods for sustainable use and (viii) building incentives into conservation and sustainable use objectives (Birnie and Boyle, 2002a). Overall, the most significant limits to the sovereignty of countries in regulating wildlife use and conservation derive from CITES and CMS Appendix-I listings, as state parties have limited, if any, flexibility in translating them into national legislation. In addition, both CITES and CMS explicitly allow states to adopt stricter domestic measures. Conversely, state parties have a variety of options in implementing the CBD obligations at the national level. Nonetheless, these broad principles and general obligations may have a highly innovative impact on the design of national legislation, particularly when introducing new concepts in a national legal framework (for instance, the participatory approach). In South Sudan the local communities living adjacent to PAs or in areas with viable populations of wildlife have a sound conservation effort in managing and benefiting from wildlife on their own lands, by creating appropriate wildlife management area categories. The communities' can also have a sound role in contributing appropriate indigenous knowledge and even perform the role of a security screen.

2.1.2 Regional Agreements

Wildlife may also be the subject of regional treaties. An important one in this context is the Protocol on Wildlife Conservation and Law Enforcement of the SADC Treaty which entered into force in 2003 and has been ratified by Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Tanzania and Zambia (with Angola and Zimbabwe having signed the Protocol only (SADC, 1999).

The Protocol recognizes states' sovereign rights to manage their wildlife resources, with a corresponding responsibility to sustainably use and conserve these resources. It also recognizes that wildlife survival depends on the perceptions and development needs of people living with wildlife. The "primary objective" of the Protocol is to establish within the framework of the respective national laws of each party common approach to the conservation and sustainable use of wildlife resources and to assist with the effective enforcement of laws governing those resources (SADC, 1999). Measures to be standardized must include, but are not limited to: "(a) measures for the protection of wildlife species and their habitat, (b) measures governing the taking of wildlife, (c) measures governing the trade in wildlife and wildlife products and bringing the penalties for the illegal taking of wildlife and the illegal trade in wildlife and wildlife products to comparable deterrent levels, (d) powers granted to wildlife law enforcement officers, (e) procedures to ensure that individuals charged with violating national laws governing the taking of and trading in wildlife and wildlife products are either extradited or appropriately sanctioned in their home country, (f) measures facilitating community-based natural resources management practices in wildlife management and wildlife law enforcement, (g) economic and social incentives for the conservation and sustainable use of wildlife and (h) measures incorporating obligations assumed under applicable international agreements to which member states are party".

States must also establish management programmes for the conservation and sustainable use of wildlife and integrate such programmes into national development plans (*Ibid*). Appropriate international institutional mechanisms are set out for the operation of these objectives, including a Wildlife Sector Technical Cooperating Unit. Measures for the conservation and sustainable use of wildlife resources are to be

effectively enforced and a regional database on the status and management of wildlife is to be established to facilitate sharing of information. Transboundary measures, such as the establishment of conservation areas, are to be promoted (SADC, 1999). In addition, a Wildlife Conservation Fund is to be established, and the SADC Tribunal is designated to settle disputes arising from the implementation or interpretation of this Protocol (*Ibid*). Other relevant regional treaties include the African Convention on the Conservation of Nature and Natural Resources (Revised Version) of 2003 (to which Lesotho is a party and other countries in the region are signatories) and the Lusaka Agreement on Co-operative Enforcement Operations directed at Illegal Trade in Wild Fauna and Flora of 1994 to which Lesotho, Tanzania and Zambia are parties, and South Africa is a signatory.

There are also examples of regional agreements made specifically to create protected areas, such as the Great Limpopo Transfrontier Park and the Kgalagardi Transfrontier Park, respectively created by treaties of 2002 and 1998.

2.2 Participation of South Sudan in Wildlife-Related Regional and International Agreements and Conventions

There are a number of multilateral environmental agreements (MEAs), which are relevant to the conservation and management of the wildlife resources of South Sudan. This includes conventions such as the CMS, CITES, Ramsar, etc. The Government of National Unity of Sudan is a contracting party and has signed and ratified several of the MEAs and Regional Agreements. Based on the provisions of the CPA and the Interim Constitutions of both the GONU and South Sudan, mechanisms need to be provided to ensure that South Sudan signs and ratifies current wildlife related conventions/agreements and actively participates in the international and regional processes (GOSS, 2005).

2.3 History of wildlife management in South Sudan

The Game Preservation Branch was established in 1902 as a small office and was manned by the British ex-army officers. During the early colonial rule, the British were concerned with the wide-spread possession of firearms among the natives. The collection of rifles and ammunition campaigns, which the British started, was not successful as the natives were reluctant to give up their rifles (Sudan, C.G.O., 1935). The major concern at that time was not to control hunting but to control the possession of firearms.

Serious efforts in wildlife conservation were started after Sudan signed the London Convention in 1933. Soon after that, Wildlife laws were developed. The objectives of Game Preservation were briefly stated as: protection of rare species in accordance with international obligations, organization of traditional hunting, organization of hunting sport, and protection of human lives, livestock, and crop from depredation by

wild animals. Several national parks, game sanctuaries and game reserves were established in the 1930's, and a few Sudanese game scouts were recruited. Like their British Superiors, who were ex-army officers, the game scouts were ex-army soldiers (Molloy, 1951).

Following the independence of Sudan in 1956 the national government established the Government agency which was entrusted with enforcing wildlife laws and executing conservation policies. Several changes were introduced to foster the relationship between the wildlife conservation agency and the Game and Fisheries Department (Sudan, C.G.O., 1965). After independence, the Game and Fisheries Department was placed under the Under-Secretary in the Ministry of Animal Resources, and that affiliation continued up to 1964. In 1965 the department was put under the direct supervision of the Minister of Animal Resources. At the beginning of the 1970s the Fisheries Section was separated from the Ministry of Animal Resources (Darling, 1971).

Before the start of the civil war in 1983, South Sudan had functional administrative, legislative and conservation structures for the management of the area's wildlife. In fact, formalized wildlife management started way back in 1935 when the British Colonial Government passed the Preservation of Wild Animals Ordinance (Sudan, C.G.O., 1935). This was followed in 1939 by the National Parks, Sanctuaries and Reserves Regulations (Sudan, C.G.O., 1965). Thereafter, following the 1972 Southern Region Self Government Act, wildlife conservation in the Southern Region was subject to the Wildlife Conservation and Parks Act (1975) of the Southern Regional Government (Sudan, C.G.O., 1975).

From 1977 up to 1983, wildlife management was under the responsibility of the Regional Ministry of Wildlife Conservation, Fisheries and Tourism. Natural forests were protected under the Central Forests Act and the Provincial Forests Act, both laws having been enacted in 1932. Environmental management was the responsibility of the Ministry of Agriculture and Natural Resources. The Wildlife Act of 1975 gave more power to the then Game Department. Furthermore, greater emphasis was put on protection and conservation of threatened, rare and endemic species and habitats. Also, for the first time, conservation education and environmental awareness were included as a matter of policy and practice. Wildlife utilization was more clearly defined and sustainably carried out in the form of tourism, trophy and sport hunting, communal hunting and others (Rzoska, 1974).

In 1994, Sudan People's Liberation Army/Movement (SPLA/M) established a Secretariat for Wildlife Conservation, Environment and Tourism (SWCET). SWCET was vested with the responsibility of wildlife conservation, fisheries management, tourism development and environmental management, among others in the liberated areas under the authority of SPLA/M. It was envisaged that the Secretariat would eventually evolve into a fully-fledged functional ministry. The SPLA/M appointed wildlife officers to manage the wildlife resources in the liberated areas (Gurtong, 2009).

In 2005, after the signing of the Comprehensive Peace Agreement (CPA), the Government of South Sudan (GOSS) established the Ministry of Wildlife Conservation and Tourism (MWCT). The Ministry has a directorate in charge of wildlife, headed by the Director of Wildlife Conservation who reports directly to the Under-Secretary, MWCT. The current staff of the Directorate of Wildlife Conservation is about 7,000 comprising the nucleus of surviving former wildlife staff

and designated military staff, as well as former Coordinating Council of Southern Sudan States (CSSS) police staff assigned at State level (Gurtong, 2009).

2.4 Periods of Civil War in South Sudan and their Implications on Wildlife

South Sudan has experienced about 40 years of civil war of 1955-1972 and 1983-2005, during which significant shifts in sources of livelihoods occurred. Civilian communities and combatants alike fed on wildlife and other wilderness products for survival, which in several areas resulted in uncontrolled hunting and over-exploitation during the periods of civil war. Many of the wildlife personnel fought alongside the army. During this period, there was lack of conservation law enforcement in government controlled areas while in areas controlled by SPLA there was some minimal law enforcement. The civil war also resulted in the proliferation of small arms and extensive trade in bush meat (GOSS, 2004).

Under such circumstances, strict protection and on-site policing are vital factors for conserving plant and wildlife populations (Pelkey *et al.*, 2000). A possible means to reduce illegal harvesting could therefore be to prevent human activities by increasing the PA status (IUCN category \geq III) and law enforcement levels. The few studies that have investigated efficiency of enforcement show that levels of illegal resource use respond strongly to patrol effort (Leader-Williams *et al.*, 1990). However, upgrading partial PAs and/or increasing law enforcement is probably economically unrealistic for most developing nations, since the international community is still reluctant to pay for conserving tropical biodiversity (Balmford and Whitten 2003). There is consequently an urgent need to explore alternative approaches to conservation and law enforcement in developing countries (Lewis *et al.*, 1990). Only a small number of Community Based Conservation (CBC) approaches have successfully included an element of on-site policing by local people in partial PAs (Lewis *et al.* 1990). In

Zambia, for example, Lewis *et al.* (1990) reported that game scouts recruited from local villages were effective in preventing illegal hunting by local residents, because of their superior knowledge of their patrol areas and high effort in comparison to civil servants.

2.5 Policy and Legislative Context Pertaining to Wildlife Conservation in South Sudan

There are three categories of legislation of the Government of South Sudan that support the establishment, management and conservation of protected areas. These include:

- Legislation concerned with land-use planning and development
- Legislative framework for broad environmental management
- Legislation concerned with wildlife conservation and management, creation and management of protected areas, and tourism development (GOSS, 2005).

2.5.1 Legislation Concerned With Land-Use Planning and Development

The Land Act (2009) regulates land tenure, usage and exercise of rights thereon. The Act also regulates, through the appropriate Government authority, land owned by Government including national parks, game reserves and any other protected areas. An important aspect of the Land Act is that it defines land held and managed by local communities as well as providing them with land and user rights. Land is divided into public, communal and private land. The Land Act includes a section on easements and lease of land, which is relevant to development of tourism and wildlife conservation projects on communal land. The Land Act also regulates the ownership of land by foreign individuals and investment companies. A Land Policy is currently under development by the GOSS to accompany the Land Act (Gurtong, 2009).

2.5.2 Legislative Framework for Broad Environmental Management

The Environmental Protection Bill (2009), the Southern Sudan National Environment Policy (2009) and the South Sudan Environmental Action Plan (2007-2016) provide the overarching environmental laws and policies that govern the environment in South Sudan. They make provisions for: the creation of a Southern Sudan Environment Authority involved in the oversight and administration of environmental affairs; the coordination and development of environmental standards and guidelines; pollution control and counter measures; the drafting of new laws and regulations and the enforcement of local environmental regulations as well as international agreements and conventions. The Water Policy (2007) regulates water use rights, pollution and water supply and provides control mechanisms for developments near rivers and streams, conservation of water and water catchment areas and the flow of water necessary to maintain wildlife, fish and forests (Gurtong, 2009).

2.5.3 Legislation concerned with Wildlife Conservation and Management, Creation and Management of Protected Areas, and Tourism Development.

The Wildlife Act (2003) and the Wildlife Protected Area Policy (2008) provide guidelines for the conservation and management of protected areas, the establishment of the MWCT and the conservation of wildlife outside protected areas. The Wildlife Conservation and National Parks Act (2003) is now outdated and is being revised by the MWCT with support from USAID and Wildlife Conservation Society (WCS). The new Act was expected to be completed in 2010 and provide the necessary guidelines and legal provisions for sound management of the sector. The Forest Act (1989) and

the Forest Policy (2007) describe in general terms the goals, objectives and strategies of the forestry sector regarding the conservation and management of natural and plantation forests as well as the promotion of woodlot management and agro-forestry by communities. The Tourism Policy (2009) aims to promote tourism based on a variety of attractions such as wildlife, historical and cultural areas. It recommends that the private sector should play an important role in tourism development and that any tourism development should be sustainable and environmentally acceptable. It envisages the creation of a National Tourism Marketing Board, which will be the driving force in marketing tourist destinations in Southern Sudan (GOSS, 2005).

2.5.4 The role of the Anti-poaching, Informer, and Park Management departments

Three departments' namely Anti-poaching, Informer and Park management play a vital role in the management, conservation and preservation of biological diversity by ensuring that wildlife is protected according to the Wildlife Act, 2003. The park management may, under Section 54, Chapter 4, of Wildlife Act, 2003, make regulations prohibiting or controlling entry into, settlement, cultivation, grazing, cutting or burning of trees or other vegetation, or such other activities as they may deem necessary for the protection of wildlife, its habitat and environment in any national parks, game reserve, forest reserve or controlled area in South Sudan (GOSS, 2005).

Anti-poaching officers may, where they have reasonable grounds to believe that an offence has been committed under this Act, 2003 or any regulations made hereunder:-

- Enter and search any land, building, camp, tent, premises, vehicle, aircraft, boat, park, animal or any other means of conveyance provided that no

Authorized Officer other than a policeman or anti-poaching officer shall enter or search any private dwelling house, except with the consent of the owner thereof, or under the authority of a search warrant;

- Seize any weapon, ammunitions, trap, snare, light, explosive, poison, vehicle, boat, aircraft or other thing that he believes to have been used for or possessed in the commission of such offence;
- Seize any animal or trophy which he believes to have been taken, traded, imported, exported or possessed in contravention of this Act or any regulations made hereunder;
- Seize and detain any livestock or domestic animal found unlawfully within the boundaries of any national park, game reserve, forest reserve or controlled area;
- Arrest without warrant any person whom he has reasonable grounds to believe that he has committed such offence, and use such force as may be reasonably necessary to effect such arrest.

According to the Wildlife Law Enforcement Act, 2003, the informer officers may, in the investigation and prevention of any offence committed under this Act or any regulations issued hereunder and generally in the enforcement of this Act and such regulations, exercise all or any of the powers conferred upon any policeman under the Code of Criminal Procedure Act, 2008, (GOSS, 2005).

2.6 Institution of South-Sudan Wildlife Conservation Authority

Under the Comprehensive Peace Agreement the government of Southern Sudan has full authority over its natural resources located in South Sudan (including wildlife and protected areas), with the exception of oil, which is regulated in conjunction with the Government of National Unity (GONU). The MWCT of the government of Southern Sudan acts as a focal point and liaison with the Ministry of Environment and Physical Development of the GONU to ensure the coordination and integration of conservation related strategies and undertakings in South Sudan (GOSS, 2005). Government responsibility for all wildlife and protected areas (Parks and Game Reserves) rests with the Ministry of Wildlife Conservation and Tourism of the Government of South Sudan (GOSS, 2005). National Parks are directly managed by the MWCT. There is some uncertainty regarding authority over Game reserves and that they may fall under the jurisdiction of state government. However, given that there are no ministries at the state levels, and the Directors of Wildlife for each of the ten state governments report to the Director General of MWCT, the Game reserves are de facto directly under the authority of MWCT. Gazetted forest reserves, come under the jurisdiction of the Forest Service of the Ministry of Agriculture and Forestry. Responsibility for water conservation is under the Ministry of Irrigation and Water and responsibility for cross-cutting environmental concerns (e.g. pollution, EIA regulations, etc.) comes under the Environment Department of the Ministry of Housing, Planning and Environment.

2.7 Current Situation of Wildlife Resources in South Sudan

Despite the ravages of 1983 to 2005 civil war, many areas of Sudan still contain areas of globally significant habitats and wildlife populations. For example, South Sudan

contains one of the largest untouched savannah and woodland ecosystems remaining in Africa as well as the Sudd, the largest wetland in Africa, of inestimable value to the flow of the River Nile, the protection of endemic species and support of local livelihoods (GOSS, 2005).

Aerial surveys conducted in 2007-2010 by the Wildlife Conservation Society and the Ministry of Wildlife Conservation and Tourism of the Government of Southern Sudan revealed various things. South Sudan has one of the largest, intact antelope migrations in the world comprising 1.2 million White-eared kob, Mongalla gazelle and tiang, which rivals the world famous Serengeti wildebeest migration. South Sudan has around 4,000 elephants and viable populations of other large bodied species such as giraffe, buffalo and the endemic Nile lechwe. Large carnivore species such as lion, leopard, cheetah and wild dog still exist. However, particular species have been decimated by poaching during the civil war (e.g. zebra, hartebeest and buffalo) and are at risk of local extirpation unless effective protection can be quickly mobilized. Rhinos have not been detected but local reports suggest that there may still be hope that this species exists. These valuable national and global assets are threatened by escalating commercial poaching linked to the proliferation of firearms, returning refugees, competition for scarce natural resources (graze and water) and the presence of extractive industries exploring for oil and other valuable minerals. In the face of these threats, protected areas provide the cornerstone for a broader strategy embedding conservation in the landscape. There are currently six national parks and 13 game reserves legally created in South Sudan, covering 10.4% of the land area (85,045 km²), but most population of wildlife, human life, and protected areas physical infrastructure were largely destroyed during the civil war. Moreover, most of these protected areas, while created on paper, never underwent a consultation process

with local stakeholders and protected area boundaries were never demarcated. Other constraints preventing the effective management of protected areas are inadequate policy and capacity for wildlife management at the operational and administrative levels (Cobb, 2006).

2.7.1 Causes of Threats to Wildlife and Protected Areas

WCS and MWCT surveys conducted from 2007-2010 indicate that there were 8,000 elephants remaining in South Sudan and that other large bodied species such as giraffe (estimated at 400), buffalo (estimated 10,000) and Nile lechwe (estimated at 4,300) still occur in viable populations (UNEP/WCS and MWCT, 2007). On the other hand, in several areas particular species have been decimated (e.g. zebra and hartebeest in Boma Park, buffalo in Southern National Park) and many other species are at risk of local extirpation unless effective protection can be quickly mobilized. Large carnivore species such as lion, leopard, cheetah and wild dog still exist and would likely thrive under suitable protection. However, whether within protected areas or in the broader landscape, this wildlife diversity is threatened and conservation strategies need to be put in place (Gurtong, 2009). The protected areas of South Sudan face considerable threats which can be grouped into four categories namely:

- Lack of integration of conservation in development planning. The comprehensive peace agreement signed in 2005 has not only brought great opportunities for biodiversity conservation and sustainable resource use and management, but also grave and growing threats to wildlife and the environment that a massive influx of displaced persons and progress developments pose. Thus the immigrants are poor and need these resources to build houses and source of energy for cooking. This

destruction has had an impact on the entire ecosystem by limiting cover, food and shelter to animal species and interfering with the ecology of the area.

- **Returning refugees.** The return of millions of refugees requires natural resource management and land-use planning to balance competing claims, needs and conservation, and ensure sustainable development. The Government of Southern Sudan has developed and passed a Land Act (2009), which needs to be complemented by a coherent policy, which will accompany other anticipated legal reforms, including the revision of sectoral laws and the enactment of legislation to manage land use.
- **Road infrastructure and large scale rural development.** Roads, large scale agricultural development schemes, water extraction, borehole creation, and commercial ranching schemes are but a few of the projects that with poor planning and management will result in habitat destruction, become conduits for a commercial bush meat trade and threaten the long-term viability of some protected areas by cutting off or disturbing important wildlife corridors and migratory routes. The construction of major roads in the region, while important for development and economic growth, are a serious threat to wildlife and protected areas. Formerly remote areas are now being linked to urban centers and what was previously hunting for local consumption rapidly becomes commercial bush meat trade using roads and vehicles as the main arteries. Careful planning of road infrastructure and other development projects that take into account long term protected areas management, ecological functioning and migration patterns, and assures tight controls that prevent the development of the commercial bush meat trade will be critical to addressing this threat.

- Extractive industries. Large deposits of oil as well as some substantive mineral deposits have been discovered in Southern Sudan in the past decades. Some of the assigned concession areas overlap protected areas and the possibility of finding important oil or mining reserves in a national park or game reserve is therefore significant. The impact of oil exploration and drilling on the environment has been well documented from other wildlife or wilderness areas in the world and with it the consequences to the environment of oil spills, road developments, influx of workers and housing infrastructure and accompanying risks of environmental pollution and commercial hunting.

While zoning of concessions and protected areas may in some cases be able to limit exploitation in ecologically sensitive areas, in others it is likely that strategies will need to be developed to minimize the negative impacts on the protected area network. The GOSS and MWCT can ensure that these consequences are minimized and that environmental impact assessments are done and followed through. There is also potential for securing oil revenues to finance the management of protected areas, particularly those directly impacted by the industry (UNEP/WCS and MWCT, 2007).

2.7.2 Rigid Management Approach

In the past there were inadequate attempts to involve communities in wildlife conservation activities. Hence communities have been indifferent to or disregarded wildlife laws. Communities have regarded wildlife as “resource for all to exploit”, a common good – which resulted in GOSS’s assertion of the tragedy of the Commons as a result of over-exploitation (GOSS, 2004). The types of weapons and availability of wildlife are the only factors that limited the amount of wildlife hunted (GOSS, 2005). The consequences of war are normally despoliation of the environment and

over-utilization of natural resources. Worse still, consequences are long term and it may take decades to rebuild the economy.

2.7.3 Wildlife outside Protected areas

There is anecdotal evidence that most of the wildlife in South Sudan is found outside Protected Areas especially during migration period. Migratory species spend a significant amount of time outside Protected Areas; hence their migratory routes and corridors outside PAs need to be protected. Therefore, policies and laws that address the issue of wildlife outside PAs explicitly need to be enacted (Rzoska, 1974).

2.7.4 Conceptual Framework

However, it is important to consider that the end result required is “healthy and well protected wildlife resources”. Such a scenario calls for promulgation and implementation of wildlife laws, education of offenders and provision of better economic conditions. Effective implementation of wildlife laws requires resources to undertake the job including hiring staff hiring in terms of the right number and quality, vehicles and equipments like radios, firearms and ammunitions among others, training of staff and community involvement (Figure 1).

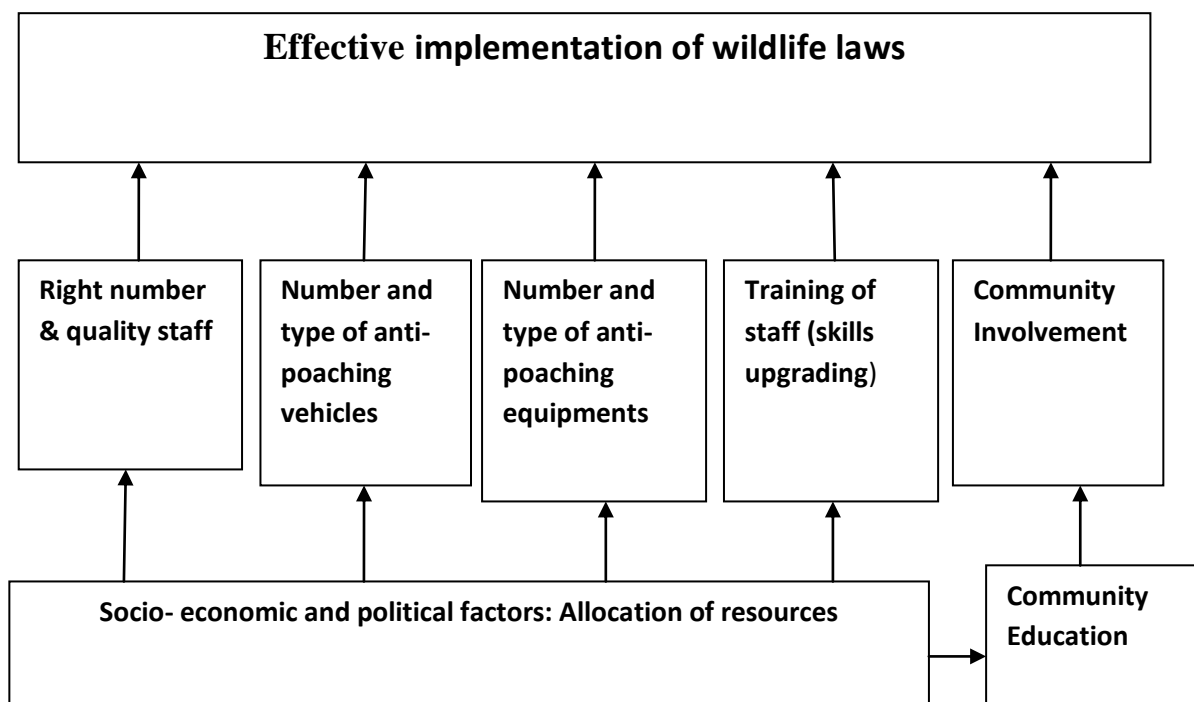


Figure 1.1: Conceptual Framework

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study Area

3.1.1 Location

The study area encompassed Badingilo National Park and its environs up to distance of five Kilometers from the park boundary. Badingilo National Park was gazetted in 1986 and covers 165,000 hectares (8,400 km²). It is located between the towns of Bor in the north, Juba in the south and Lafon to the east of the White Nile (Blower 1977). The park is situated on a swamp 40km east of Mongalla, and provides a dry-season refuge for mammal populations. The park is surrounded by a large area of mostly waterless plains (Figure 2).

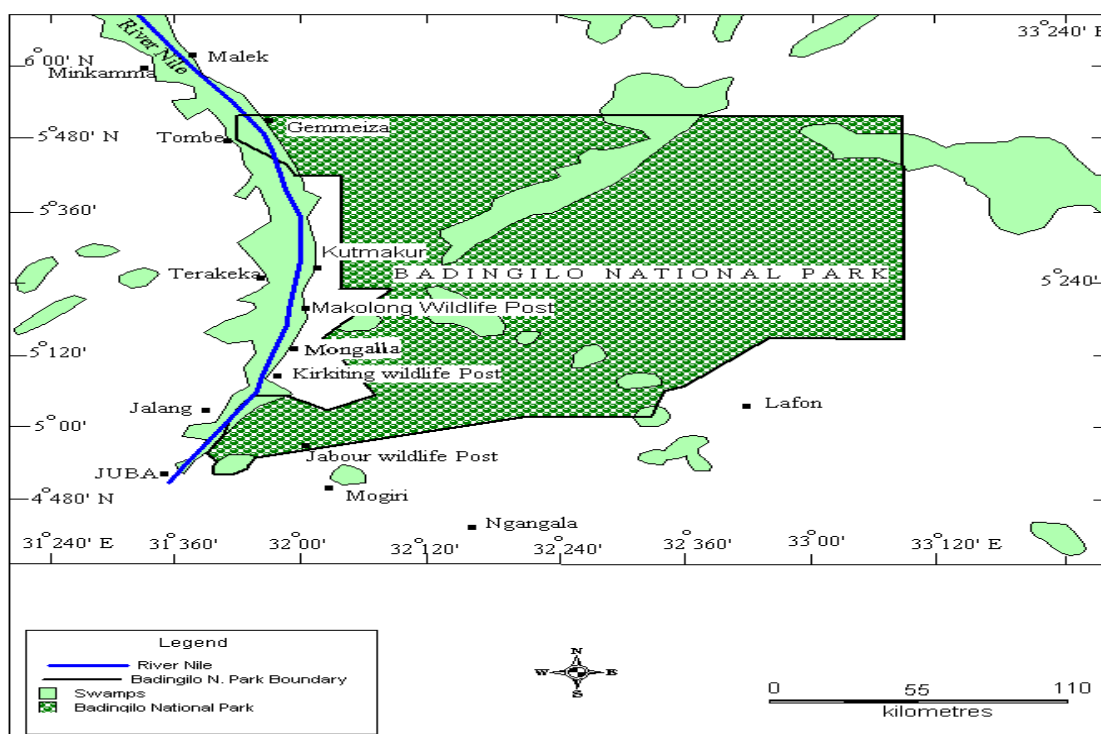


Figure 2.1: Map of Badingilo National Park

3.1.2 Topography, Geology and Soils

The land, like much of South Sudan, is predominantly flat and marked by occasional isolated large hills. The low-lying land contains many rivers and lakes and is prone to flooding during the rainy season (Lebon, 1965). The soil is predominantly clay-based, causing drainage and water retention problems, and provides a very fertile basis in support of cattle grazing. To the east, soils are sand loams while black cotton soils occur in the lowlands. The former are well drained while the latter are often water logged.

3.1.3 Climate

The area has tropical wet and dry climate and as it lies near the equator, temperatures are hot year around. However, little rain falls between November and March, which is also the time of the year with the hottest maximum temperatures, reaching 38 °C (100 °F) in February (Lebon, 1965). Between April and October, up to 100 millimeters (mm) of rain falls per month. The annual total precipitation ranges from 1,000 to 1,500 mm.

3.1.4 Fauna and Flora

The study area historically was named Badigeru Reserve which was known for its wide variety, diversity and abundance of wildlife and a number of bird species. Herbivorous mammal species reported include the White-eared kob, Mongalla gazelle, Tiang, Reticulated Giraffe, Zebra, Grant's gazelle, Lesser Kudu, Beisa oryx, Warthog, Bohor reedbuck (Molloy, 1950). Carnivores which were present include Lion, Spotted Hyena, Wild dog, Leopard and Black-backed jackals. There are also a number of bird species which are resident including: Ostrich, Marabou stork, kestrel,

White-crested turaco, White –bellied go–away bird, Somber nightjar, Red-throated bee-eater, and Jackson’s hornbill, among others (Sinclair and Ryan, 2000),

The dominant trees species in the Badingilo National Park includes *Acacia seyal* (Thirty thorn), *Azalia quanzensis* (Pod mahogany), *Bauhinia galpini*, *Balanites aegyptica* (desert date), *Celtis spp* (stink wood), *Calotropis procera* (Sodom apple), *Combretum spp*, *Cassia spp*, *Dichrostachyus cinerea* (Bell-flowered mimosa), *Diospyros mespiliformis* (African ebony), *Erythrina spp* (Kaffir boom), *Euphorbia ingens* (Euphorbia candelabra), *Ficus spp* (Fig), *Kigelia africana/aethiopica* (Sausage tree), *Vitex doniana* (Black plum), *Ziziphus spp* (Buffalo thorn/wait-a-bit), *Tamarindus indica* (Tamarind), *Azadirachta indica* (Neem). (Boitani, 1981). The grasses type of the area consists of swamp meadow, with dense low growing Stoloniferous grasses, *Echninochloa pyramidalis*, interspersed with occasional patches of taller clump-forming grasses as well as an understory of *Hyparrhenia rufa* grass (Fryxell, 1985).

3.1.5 The Surrounding Community

The inhabitants of this area are the Mundari, the Pari and the Bari tribes. Mundari are a small Nilotic tribe whose traditional lands are located roughly 40 kilometers north of Juba. They are bordered to the north by the Bor Dinka at Pariak and to the south by the Bari of Juba at the Ku’da River. Molloy (1950) stated that the main settlement areas in Mundari land are Terekeka, Mangalla, Gemeiza, Muni, Tombek, Tindalo, Rego, Rokon, Koweri and Ku’da. The Mundari, like other nilotic tribes rear cattle on a large scale. Cattle are a source of food, a form of currency and a source of social status. The Mundari also cultivate sorghum, groundnuts and catch fish using nets and spears.

The Bari ethnic groups in the South Sudan occupy the savanna lands of the Nile Valley, and speak the Bari language. The Bari are sedentary agro-pastoralists and exploit the savanna lands along the river Nile 64 km east and west of the River Nile. The Bari economy is based on subsistence mixed farming, and livestock are mainly raised to supplement other food sources, and also as a socio-economic and financial investment.

The Pari live in South east of the River Nile. They live around Lafon Hills, a small rocky elevation that rises abruptly out of the surrounding plain and is completely covered with terraced Pari villages. Until February 1993 they used to live at the foot of the Lipul Hills (Lafon Hill) in six large villages namely Wiatuo, Bura, Puchwa, Kor and Augulumere. When all the villages were burned down in the war, the people scattered and now live in various settlements along the Hoss'Atondi' river to the east, and the Hinyetti 'Chol' river to the west (Hillman, 1982).

Pari land is composed of wooded Savannah, and annually receives 800mm of rainfall. Many places become swampy during the rainy seasons. The economy is mixed and is characterized by subsistence agriculture, animal husbandry, hunting and fishing. Although the Pari cultivate sorghum for local use, the surplus is normally sold. Other major crops grown are cowpeas, green grams, pumpkin, okra, sesame and tobacco. They also raise cattle, goats, sheep and chickens. Domestic animals are essential as medium connecting human beings, as commodities and as sacrifices to their gods. During the dry season, the Pari actively engage in hunting and fishing to supplement their protein diet and as source of income. Rivers Hoss and Hinyetti provide fish of various kinds thus making dried and smoked fish an important trade item. In addition, gathering of wild edible plants also plays an important part in food supply, in particular during drought periods.

3.2 Research and Sampling Design

The study adopted the explanatory survey research design. This was chosen because it provides quantitative and numeric description of variables as well as qualitative description and explanation of the variables (Kumar, 2005).

A sample of 200 respondents comprising of 84 community members and 116 park staff, was selected through simple random sampling technique. Three villages of Mangala, Kutmakur and Gemmeiza were selected and used as study samples to represent all the villages adjacent to Badingilo National Park. Simple random sampling of households was possible because there was a list of all households in the study villages. Random sampling method was used to select the households because the method, when well planned, is free of bias and ensured an equal chance of any individual household to be selected during the exercise (Kumar, 2005).

3.3 Target Population

The target population was 516 respondents comprising of 400 community members from three villages of Mongalla, Kutmakur and Gemmeiza, and 116 park staff.

3.4 Data Collection Techniques

Data was collected using questionnaires, focus group discussion, direct observations, informal talks and key informant interviews. According to Kaswamila (2006) the use of multiple methods in data collection is recommended since multiple methods look at the research from several representative view points.

3.4.1 Questionnaires

This is the most common method used by researchers in order to gather relevant information. Byers (1996) states that questionnaires can be used to gather information about behaviours and knowledge skills and other motivational factors that influence

them. Two hundred questionnaires were administered to the villagers and the park staff. The questions were meant to gather relevant information on human activities in the area, wildlife conservation and management activities and wildlife law enforcement. All questions were translated and asked in Arabic, and whenever necessary, local language was used.

3.4.2 Focus group discussions

Focus group discussions were carefully planned discussions designed to provide in-depth information about how a certain group of people perceive a certain issue of interest or phenomenon (Byers 1996). Questions were made and used to elicit information from various social groups with group members ranging from 6-10 individuals.

Various criteria including age, occupation and responsibility in the community were used in selecting focus group members. The method was effective since it elicited information from participants who were free to talk as they were in a group of familiar people.

3.4.3 Direct Observation

This method included basically observing and noting what relevant variables or items were seen and were recorded by examining the land terrain, tools and techniques used in enforcing the wildlife laws during the visit to most problematic areas (Kumar, 2005).

Use of this method enabled the researcher to identify challenges and their possible cause. The researcher also visited courts and police stations to see and hear proceedings related to wildlife cases in order to identify weakness in prosecutions of wildlife cases.

3.4.4 Informal Talks

This method involved special discussions with management staff that are heads of units, and senior officials in protected areas (Flowerdew and Martin, 1997). They gave an overview of the challenges wildlife law enforcement faces with emphasis on their effects on the overall objective of their organizations.

3.4.5 Key Informant Interviews

The key informants are those individuals, institution heads or government representatives with an interest and a stake in the conservation of natural resources like wildlife. These include NGOs supporting protected areas and individual donors (Flowerdew and Martin, 1997). In this study local people or organization heads with special interest, knowledge and long experience about wildlife were selected. They were interviewed to explain trends in resource decline and the general challenges in enforcing wildlife laws.

3.5 Materials

The researcher occasionally accompanied the ranger patrol team to the field in order to get first hand information and cross check the accuracy of challenges listed in the questionnaires and interview schedules. This was done to also identify the challenges not mentioned or overlooked and which contribute to loss of natural resources particularly flora and fauna. Other materials used were:

- Field guide books for identification of wildlife (mammals and birds).
- Binoculars for easy identification of wildlife (mammals and birds).
- Digital camera, for taking some relevant photos in the field, for example, poachers and carcasses of wild animals.
- Note books, pens and sheets for recording data.

- Questionnaire papers for gathering primary data.
- Vehicle to access and traverse the study area.

3.6 Data Analysis and Presentation Techniques

The data collected were analyzed using both qualitative and quantitative methods. Qualitative data were analyzed using the Statistical Package for Social Science (SPSS) to derive descriptive statistics, such as frequencies and percentages. Results are presented using tables and bar graphs. Quantitative data was analyzed using the Chi-square test (Hesse-Biber and Leavy, 2004). Result are tested at 95% level of confidence or at $\alpha = 0.05$

The chi-square formula used on the data in this study is:

$$\chi^2 = \sum \frac{(\mathbf{O} - \mathbf{E})^2}{\mathbf{E}}$$

Where;

χ^2 = Chi Square value

O = the Observed Frequency in each category

E = the Expected Frequency in the corresponding category

Σ = “sum of”

CHAPTER FOUR

RESULTS

4.1 Response Rate from Respondents

Out of the 200 questionnaires administered 39 (19.5%) were not returned. This included seven questionnaires that were returned but were unusable because they were either blank or only partially filled. In one case, the respondent created and revised categories such that the data could not be entered without serious interpretation and alteration. Hence, 161 questionnaires were returned. All the 84 questionnaires administered to the community were returned, resulting in 100% response rate, while only 77 out the 116 questionnaires issued to wildlife law enforcement officers' were returned, resulting in a 66.4% response rate.

4.2 Demographic Information

This section provides basic demographic information on respondents which relates to their gender, age and education level.

4.2.1 Gender of Respondents

As shown in Figure 4.1, majority (97.4%) of the respondents interviewed among the wildlife law enforcement officers were male. However, the male respondents from the community comprised (71.4%) while (28.6%) were females.

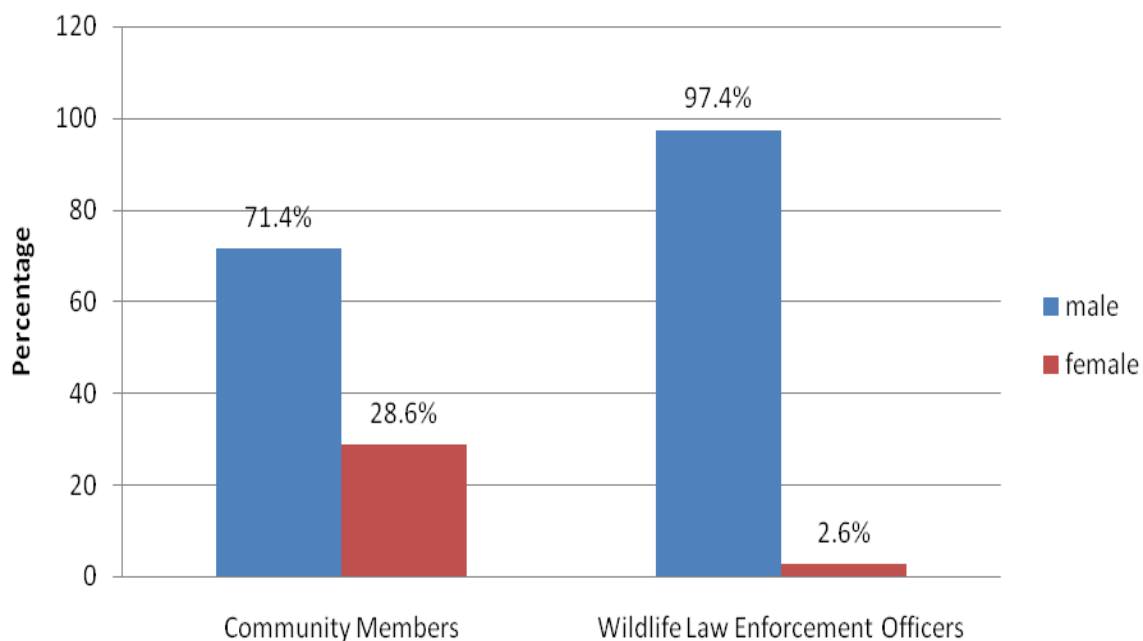


Figure 4.1: Gender of the Respondents (Source: Survey data, 2012)

4.2.2 Designation/Rank and Duty allocation of Wildlife Law Enforcement Staff

The designations of wildlife law enforcement staff interviewed were as follows: Private (48.1%), corporal (18.2%), sergeant major (13.0%), sergeant (10.3%), officers (5.2%), lance corporal (3.9%) and warrant officer (1.3%). Majority of the wildlife law enforcement officers (84.4%) were in the Anti-poaching department, while (11.7%) were in Park Management and Intelligence (Informers) (3.9%) (Table 4.1)

Table 4.1: Designation/Rank and Duty allocation of Wildlife Law Enforcement**Staff**

Designation/Rank	Frequency	Percent
Wildlife officers (lieutenant; and 2 nd lieutenant	4	5.2
Warrant officer	1	1.3
Sergeant Major	10	13.0
Sergeant	8	10.3
Corporal	14	18.2
Lance corporal	3	3.9
Private	37	48.1
Total	77	100.0
Duty Allocation		
Department	Frequency	Percent
Anti-poaching	65	84.4
Informer (Intelligence)	3	3.9
Park Management	9	11.7
Total	77	100.0

Source: Survey data, 2012

4.2.3 Length of Service and Education Level of the Personnel in the Park

The majority (36.4%) of the staff in the Badingilo National Park had worked there for at least one year, while the rest had worked less than one year.

The greatest proportion of the respondents (44.2%) had only attained Primary level of education, 2.6% had reached college or university, and 24.7% were illiterate (Table 4.2).

Table 4.2: Length of Service and Education level of Wildlife Law Enforcement Staff in BNP

Length of Service	Frequency	Percent
< 1 year	28	36.4
1-2 years	12	15.6
2-3 years	8	10.4
3-4 years	13	16.8
4-5 years	8	10.4
□ 5years	8	10.4
Total	77	100.0
Level of Education		
	Frequency	Percent
No education	19	24.7
Primary school	34	44.2
Secondary school	22	28.5
College	1	1.3
University	1	1.3
Total	77	100.0

Source: Survey data, 2012

4.3 Reasons for establishment of Badingilo National Park

The majority (77.9%) of the respondents drawn from wildlife staff believed that the park was established for protection of animals against poaching, 20.8% indicated protection and conservation of natural resources and 1.3% believed it was to bring economic benefit to the government as shown in table 4.3.

Table 4.3: Reasons for establishment of Badingilo National Park

	Frequency	Percent
To bring economic benefit to the government	1	1.3
To protect and conserve natural resources	16	20.8
Protection of wild animals against poaching	60	77.9
Total	77	100.0

Source: Survey data, 2012

4.4 Perception of different staff categories on occurrence of illegal activities

The three categories of staff (Anti-poaching, Informer and Park management) working in BNP perceive poaching as the most common illegal activity (90.9%), followed by encroachment into the park (55.8%), cutting of grass (54.5%), collection of firewood (53.2%) and cutting trees for timber (51.9%) while the least common was grazing (16.9%) (Table 4). The perception of the occurrence of the various illegal activities differed significantly ($\chi^2=55.78$, $df =12$, $P<0.001$) among the park staff. Therefore, the respondents from the three categories of park staff interviewed gave different perception. The anti-poaching department personnel reported that the major illegal activity was poaching (89.2%) followed by cutting grass (74.7%), and encroachment into the park (58.5%). The minor illegal activities according to anti-poaching officers were collection of firewood (46.2%) and cutting trees for timber

(44.6%). Similarly informers indicated that the major illegal activity was poaching (100.0%), followed by cutting grass (66.7%), cutting trees for timber (66.7%), collection of firewood (66.7%) and encroachment into the park (33.3%). Lastly all the park management officers interviewed reported that four illegal activities among them poaching, cutting grass, cutting trees for timber and collection of firewood are the major challenges (100.0%), followed by illegal grazing (88.9%).

Table 4.4: Perception of different staff categories on occurrence of illegal activities in BNP

Illegal activities	Anti-poaching (n=65, 100%)		Informer (n=3, 100%)		Park Management (n=9, 100%)		Total (N=77, 100%)	
Poaching	58	89.2	3	100	9	100	70	90.9
Illegal grazing	5	7.7	0	0	8	88.9	13	16.9
Cutting grass	31	74.7	2	66.7	9	100	42	54.5
Cutting trees for timber	29	44.6	2	66.7	9	100	40	51.9
Collection of firewood	30	46.2	2	66.7	9	100	41	53.2
Encroachments in to the Park e.g. collecting of medicinal plants	38	58.5	1	33.3	4	44.4	43	55.8
Others e.g. charcoal burning, lighting fires and collection of wild fruits. etc.	17	26.2	0	0	3	33.3	20	26.0

Source: Survey data, 2012

4.5 Challenges faced in enforcing wildlife laws in BNP

Table 4.5 shows eleven challenges faced by wildlife law enforcement officers in BNP. The majority (94.3 %) of the respondents reported that inadequate number of vehicles and equipments was the major challenge affecting wildlife law enforcement while

inadequate staff was the second (85.7 %) and third was inadequate or weak laws and policies (74.0%). Only 20% of the respondents reported inadequacy of ammunitions, lack of training, and presence of a large military garrison and lack of strategic management plan for the park as challenges in wildlife law enforcement. Chi-square analysis using contingency tables showed that respondents' views concerning challenges faced in enforcing wildlife laws in BNP differed significantly among the staff interviewed ($\chi^2=76.51$, $df =20$, $P<0.001$). Therefore, the respondents from the three departments namely Ant-poaching, Informer and Park management interviewed gave different views about the challenges facing wildlife law enforcement in BNP.

Overall, views of the anti-poaching officers showed that four key challenges faced in enforcing wildlife laws were inadequate number of vehicles and equipments (93.8%), inadequate staff (84.6%), inadequate or weak law/policies (72.3%) and inadequate food/water (55.4%). On the other hand, all informers (100%) believed that inadequate number of vehicles and equipment and the presence of a military garrison in the area were the greatest challenges followed by inadequate staff and inadequate food/water (66.7%). The minor challenges according to informer officers were inadequate or weak laws and policies, lack of training and inadequate communication facilities (33.3%).

The park management department staff believed that only six of the listed challenges (Table 4.5) were serious while four of them were not. All the park management staff (100%) reported that inadequate number of vehicles and equipments, inadequate staff, inadequate or weak laws/policies, inadequate food/water and inadequate of medical facilities were the major challenges followed by political interference (66.7%).

Table 4.5: Challenges faced in enforcing wildlife laws in BNP

Challenges	Anti-Poaching (n=65, 100%)		Informer (n=3, 100%)		Park Management (n=9, 100%)		Total (N=77, 100%)	
Political interference	18	27.7	0	0	6	66.7	24	31.17
Inadequate number of vehicles and equipments	61	93.8	3	100	9	100	73	94.3
Inadequate staff	55	84.6	2	66.7	9	100	66	85.7
Inadequate or weak laws and policies	47	73.2	1	33.3	9	100	57	74.0
Inadequate of food/water	36	55.4	2	66.7	9	100	47	61.06
Inadequate of ammunition	13	20.0	0	0	0	0	13	16.9
Inadequate of communication facilities	18	27.7	1	33.3	0	0	19	24.7
Lack of strategic management plan for the park	12	18.5	0	0	0	0	12	15.6
Inadequate of medical facilities	12	18.5	0	0	9	100	22	27.3
Lack of training	10	15.4	1	33.3	0	0	11	14.3
Presence of large military garrison	9	13.8	3	100	0	0	12	15.6

Source: Survey data, 2012

4.6 Causes of challenges facing wildlife law enforcement in Badingilo National Park

The overall results from respondents in BNP (park staff) showed that the main causes of challenges to law enforcement were poverty (85.7%), negative attitude toward conservation (70.1%), lack of alternative livelihood resources (63.6%) increasing population (61%) and civil war (53.2%). The respondents views concerning the causes of challenge on wildlife law enforcement in BNP differed significantly among the park staff ($\chi^2 = 41.72$, $df = 16$, $P < 0.001$).

The five major causes of challenges reported by the anti-poaching staff were exactly the same as the general views of all respondents in BNP (Table 4.6). Lack of training and SPLA influence were the least important causes of challenge to wildlife law enforcement as reported by only (6.2%) and (4.6%) of the anti-poaching personnel, respectively.

The informers' category believed that the major cause of challenges to law enforcement was lack of employment (100%), poverty (66.7%) and lack of alternative livelihood resources (66.7%). Negative attitude towards conservations and increasing population (33.3%) were the least causes of challenge to wildlife law enforcement. None (0%) of the informers revealed civil war/tribal conflict, traditional/cultural practices, lack of training and SPLA influence as causes of challenges to law enforcement.

All (100%) of the park management staff reported that poverty, negative attitude towards conservation, increasing population and lack of alternative livelihood resources were the major causes of challenges to law enforcement, followed by civil war/tribal conflict (88.9%), traditional/cultural practices (66.7%). Lack of employment (11.1%) was the least of the causes, whereas none (0%) reported that lack of training and SPLA influence were causes of challenges to law enforcement.

However, the disparity among the reports of the three departments is mainly attributed to the fact that there are weak laws and policies that undermine the collaboration between three departments and the community. There is also a sense of competition for control of the park from the three departments and as such, illegal activities go on unnoticed or they are reported but no firm action is taken to remedy the situation.

Table 4.6: Causes of challenges on wildlife law enforcement in BNP

Causes	Anti-poaching (n=65, 100%)		Informer (n=3, 100%)		Park Management (n=9, 100%)		Total (N=77, 100%)	
Poverty	55	84.6	2	66.7	9	100	66	85.7
Negative attitude towards conservation	44	67.7	1	33.3	9	100	54	70.1
Increasing population	37	56.9	1	33.3	9	100	47	61.0
Civil war/tribal conflict	33	50.8	0	0.00	8	88.9	41	53.2
Traditional/cultural practices	21	32.3	0	0.00	6	66.7	27	35.1
Lack of alternative livelihood resources	38	58.5	2	66.7	9	100	49	63.6
Lack of training	4	6.2	0	0.00	0	0.00	4	5.2
Lack of employment	11	16.9	3	100	1	11.1	16	20.8
SPLA influence	3	4.6	0	0.00	0	0.00	3	4.0

Source: Survey data, 2012

4.7 Proposed Anti-Poaching Measures to mitigate the effect of challenges in Wildlife Law Enforcement in BNP

4.7.1 Anti-Poaching Measures

Table 8 shows that overall, three major anti-poaching measures are taken to curb poaching and are provision of social funds from the government, NGO's and others (96.1%), collaboration with local community (83.1%) and increase in wages and salaries of wildlife law enforcement officers (74%). Other less critical measures include adopting more efficient communication equipment (59.7%) and involvement of politicians/seeking for political support (54.5%). Adoption of better strategic administrative measures (19.4%) and creating more awareness and training (15.6%) were not considered major anti-poaching measures undertaken in the park. Chi-

square contingency test results showed that respondents views on anti-poaching measures were differed significantly among park staff ($\chi^2 = 32.97$, $df = 16$, $P < 0.001$). These differences can be attributed to the fact that the three departments (Anti-poaching, Informer and Park management) play different roles in the management, conservation and preservation of biological diversity and thus there arises differing interpretations of the information gathered from the field.

The anti-poaching department reported that four anti-poaching measures were adopted among them: provision of social funds from government, NGO's and others (95.4%), collaboration with local community (81.5%), increase in wildlife law enforcement officer's wages and salaries (69.2%) and better and more efficient communication equipment (69.2%).

All the respondents (100%) from the informer department reported that increase in wages and salaries were major anti-poaching measures, followed by support for the community (66.7%) and collaboration with the community (66.7%) (Table 4.7).

All respondents (100%) from the park management department reported that five anti-poaching measures were major i.e. provision of social funds from government, NGOs and others, collaboration with local community, increase in wages and salaries of wildlife law enforcement officers, supporting the community and involvement of politicians/seeking political support.

Table 4.7 Proposed Anti-Poaching Measures to mitigate the effects of challenges of wildlife law enforcement in BNP

Anti-poaching Measure	Anti-poaching (n=65, 100%)		Inform (n=3, 100%)		Park Manage ment (n=9, 100%)		Total (N=77, 100%)	
Collaboration with local community	53	81.5%	2	66.7%	9	100%	64	83.1%
Provision of social funds from government, NGO's and others	62	95.4%	3	100%	9	100%	74	96.1%
Involvement of politicians/seeking for political support.	33	50.8%	0	0.00%	9	100%	42	54.5%
Increase wages and salaries of employees	45	69.2%	3	100%	9	100%	57	74.0%
Supporting the community by creating of enterprise (business) projects	15	23.1%	2	66.7%	9	100%	26	33.7%
Provision of food and water	18	27.7%	0	0.00%	1	11.1%	19	24.7%
Adopt better and strategic administrative measures	14	21.5%	0	0.00%	1	11.1%	15	19.4%
Adopting more efficient communication equipment	45	69.2%	1	33.3%	0	0.00%	46	59.7%
Creating more awareness and training	10	15.3%	1	33.3%	1	11.1%	12	15.6%

Source: Survey data, 2012

4.8 Involvement of the Local Community in the Management of Badingilo National Park

Results showed that 51.9% of the officers revealed that they do not involve the community living adjacent to the park in park management because communities are not aware about conservation. However, 48.1% of the officers reported that they involved community members in conserving the natural resources of the park.

Study findings also revealed that most of the members of the community do not take measures when they see poachers within the park as reported by 59.7%, while 40.3% of the officers reported that community members take measures when they see poachers in the park. Study findings also showed that majority (96%) of the community members reported that they utilize wildlife and other natural resources in the park while only 4% reported that they do not utilize natural resources in the park.

4.9 Reasons for involvement or non-involvement of police in enforcing the wildlife law in BNP

Forty four (57.1%) of the respondents stated seven reasons why police are not involved in enforcing wildlife law, whereas thirty three (42.9%) gave 5 reasons why police are involved in enforcing wildlife law in BNP (Table 8). The main reasons why police are not involved in enforcing wildlife laws were that police deal with civilian not wildlife laws (34.1%), lack of knowledge on the importance of wildlife (15.9%), some police officers collaborate with poachers, and police have their own specific law which provides for investigation of a poacher and there is no police unit in the park (11.4%).

Thirty three (42.9%) of wildlife officers argued that police could be involved in enforcing wildlife laws for the following reasons: because police help in locating and arresting poachers (30.3%), they assist during court cases (24.2%), it is government policy (21.2%) and they cooperate and participate in conserving natural resources inside the park (18.2%).

Table 4.8: Reasons for involvement or non involvement of police in enforcing wildlife law in BNP

Reason for involvement/non involvement of police in anti-poaching activities	No (n=44)		Yes (n=33)	
	No	%	No	%
Police deal with civilians, not wildlife	15	34.1%	0	0.00
Police not well trained to undertaken anti-poaching	4	9.1%	0	0.00
Police have their own specific law which only provides for investigation of a poacher	5	11.4%	0	0.00
Lack of awareness on the wildlife resources	2	4.5%	0	0.00
Lack of knowledge on the importance of wildlife	7	15.9%	0	0.00
It is a government policy	0	0.00	7	21.2%
No police unit in the park	5	11.4%	0	0.00
Some police officers collaborate with poachers	6	13.6%	0	0.00
Police cooperate and participate to conserve the natural resources	0	0.00	6	18.2%
Police assist during court cases	0	0.00	8	24.2%
Police mount roadblocks searching for illegal wildlife products	0	0.00	2	6.1%
Police help in locating and arresting poachers	0	0.00	10	30.3%
Total	44	100.0	33	100.0

Source: Survey data, 2012

CHAPTER FIVE

DISCUSSION

5.1 Reasons for the establishment of Badingilo National Park

Results showed that majority of the park staff believed that BNP was established for the protection of wild animals against poaching, protection and conservation of natural resources and to bring economic benefit to the government. Protection of wild animals as a reason for establishing the park was unexpected because anti-poaching is the major activity of the park staff. The finding of this study agrees with Newmark and Hough (2000) that the management of protected areas has been based on the idea that protected areas are of primary economic importance to a nation; and that they must be protected and shielded from people living adjacent to them. This is often achieved through the strict enforcement of rules to prevent illegal activities.

5.2 Perception of park management staff on occurrence of illegal activities in

BNP

Findings that the three categories of staff in BNP believed that poaching was the most common illegal activity was not unexpected. This is because poaching is indeed the most pervasive illegal activity as most civilians have automatic weapons such as AK-47 rifles. The government has attempted to disarm the citizens without much success. The possession of such firearms makes many civilians become poachers. The availability of firearms coupled with widespread poverty is a sure recipe for poaching. Illegal killing of animals by the use of automatic weapons such as AK-47 is difficult to control. Poaching networks are well planned, organized, and very secretive to detect. The ammunitions used by the weapons are locally available, and cheap to

obtain. Most of the ammunitions are availed or bought from the forces or army. The results support Ocha's (2006) assertion that conservation legislation has changed the ancient hunting–gathering practices on the continent into illegal practices, broadly known as poaching. Results also concur with those of Ty Sokun, *et al.*, (2001) who point out that apart from modern thinking and new conservation approach, poaching continues existing and creates conflict of interest and value systems between the conservation establishment and general public. Therefore, techniques for illegal resources utilization has changed from primitive ways to advanced ways due to growth in technology and it differs from one community to another as well as species to species. The criminals also have easy access to transport, ready market and communication system to assist them in their operations.

5.2.1 Encroachment into the Park

Encroachment in the park for grass, firewood collection and cutting trees for timber may be explained by the fact that the surrounding communities are poor and need these resources to build houses and source of energy for cooking. The destruction of habitats though logging and tree felling is common in the western part of Badingilo National Park. The common tree, “*Combretum spp*”, produces good timber and is cut using pit saws, axes and pangas. This destruction has had an impact on the entire ecosystem by limiting cover, food and shelter to animal species and interfering with the ecology of the area. These findings corroborate with those documented by Hillman (1982).

The result that grazing was a less common illegal activity may be due to the fact that it is easy to be detected by the patrol teams. The consequences of this activity are

severe, especially if cattle are impounded in the park. Penalties for such offences may include heavy fines.

Study findings revealed that majority of the community members reported utilizing wildlife and other natural resources in the park. Only a few of them, however, reported that they do not utilize natural resources in the park because they were new in the study area and had never entered the forest during their period of residence. Results also showed that the impact of the foregoing illegal activities on the survival of wildlife species call for the need of strong penalties that reflect the harm caused to be imposed at all levels within the judicial system (Boitani, 1981).

5.2.2 Views of staff from sampled departments on Poaching and other illegal activities in the Park

Staff from the three wildlife law enforcement arms i.e. anti-poaching, informer and Park management in the BNP perceive poaching as the most common illegal activity occurring in the park, followed by encroachment into the park, cutting of grass, collection of firewood and cutting trees for timber. However, findings of this study indicate that the perception of the occurrence of the various illegal activities is different among the three categories of park staff. This result indicates that staff have differing points of view concerning illegal activities in the park. This can be explained by the fact that staff perception on causes and effect of poaching differs.

The Government of South Sudan has developed and passed a Land Act (2009), which needs to be complemented by a coherent policy, which will accompany other anticipated legal reforms, including the revision of sectoral laws and the enactment of legislation to manage land use (Gurtong, 2009). There is thus an ever increasing need

for shelter which is made worse by the fact that majority of them are poor and thus resort to the park for grass and timber to build their houses as well as making a living out of it and the wild animals for food and trade. The reason for the different views on the illegal activities might be explained by the fact that there is lack of synergy among the three departments. There is also little cooperation between the populace and the law enforcement agencies in relation to the reporting of illegal activities in the park. In the past there were inadequate attempts to involve communities in wildlife conservation activities. Hence communities have been indifferent to or disregarded wildlife laws. Communities have regarded wildlife as “resource for all to exploit”, a common good – which resulted in GOSS’s assertion of the Tragedy of the Commons as a result of over-exploitation (GOSS, 2004).

5.3 Challenges faced in enforcing wildlife laws in BNP

The finding that inadequate number of vehicles and equipments were the greatest challenges may be explained by the fact that vehicles and other anti-poaching equipments are expensive. For a relatively poor country like South Sudan, with many competing demands for money, purchase of vehicles and equipments for anti-poaching is of low priority to the government. Hence, there is increase in number of poachers in the park thereby increasing illegal trade in wildlife and their products.

The result that inadequate staff was the second most important challenge may be explained by lack of money. Staff requires regular salary payments and provision of other welfare services such as medical care. The government of South Sudan has a limited capacity to employ all staff needed in BNP. If this problem is not addressed, this may result to poachers surpassing wildlife officers hence more killing of wild animal in the park, a situation which can cause harm in the tourism industry.

Whereas many respondents thought that weak laws and policies are a major challenge, this may not indeed be the case. The real challenge may be implementation of the existing laws and not their inadequacy or weakness. However, it must be pointed out that there is no official wildlife policy since the draft wildlife policy is still under discussion. The significant difference in the respondents views among the park staff may be explained by the fact each department's views are influenced by its core role and mandate. Thus protected areas, where natural resources still exist, have become a victim of various illegal resource exploitation activities (Jachmann, 1998). The findings show that the challenges faced in enforcing wildlife laws affect the overall objectives of the Badingilo National Park. In South Sudan, 10.5% of all protected areas are found at, close or share an international boundary, for example, Boma National Park in South Sudan and Gambella National Park in Ethiopia, or Kidepo Game Reserve in South Sudan and Kidepo National Park in Uganda. Enforcement of laws, therefore, requires international cooperation with agreed modalities by both such states (GOSS, 2005). In some circumstances, some states become a party to bilateral or regional agreements and its neighbors don't honour these agreements, leading to a problem in enforcing laws. Non-compliance of one country to international law on certain migratory animals becomes a challenge to the other party's enforcing agency. This can result to conflicts in the management of shared resources.

The New Sudan Wildlife Force Act 2003, Capt 8 does not cover enforcement of law outside parks and Game Reserves especially on hot pursuit. A hot pursuit refers to those situations where the rangers are chasing the gangs beyond PAs boundary. It has been shown that almost one-third of all African countries (32.1%) have a national park sharing an ecosystem between two or three states or whose wildlife migrate to

the surrounding private or communal lands(Blake *et al*, 1995). This implies that any poaching activities that occurs outside the park will not be regarded illegal, and this may increase killing of wild animals that happens to be outside the park and game reserves.

5.3.1 Views of staff from sampled departments on enforcing wildlife laws

The views of staff from the three departments (Anti-poaching, Informer and park management) in the BNP showed that the greatest challenges faced in enforcing wildlife law were inadequate number of vehicles and equipments followed by inadequate staff, inadequate of foods/water, inadequate or weak laws/policies. However, the findings of this study indicated that the challenges faced in enforcing wildlife law are different among the three departments of the park staff ($\chi^2=76.51$, $df=20$, $P<0.001$). This disparity among the reports of the three departments is mainly attributed to the fact that collaboration and coordination among the three departments weak. There is also a sense of competition for control of the park from the three departments and as such, illegal activities go on unnoticed or they are reported but no firm action is taken to remedy any situation. Failure to undertake actions against reported poaching cases results to more poaching activities without fear of being arrested.

5.4 Causes of challenges of wildlife law enforcement in Badingilo National Park

Results showed that the major causes of challenges to law enforcement were poverty followed by negative attitude towards conservation, lack of alternative livelihood resources, increasing population and civil war. The issues of poverty, negative attitude towards conservation and general apathy of the current situation is understandable

based on the recent history of civil war and massive translocation of people into South Sudan. Unless the country develops a coping mechanism to alleviate the current state of affairs, these causes of challenges are likely to persist for long, with dire consequences to the wildlife populations.

5.4.1 Views on Poverty and its Implications

The finding that poverty is the greatest cause of challenges in BNP may be explained by the fact that a poor person requires resources which may be out of his reach. The only solution is to seek resources for survival from nature. Such basic natural resources from nature include wild animals, berries and fruits for food. To make shelter in terms of houses (huts), the poor have to harvest grass and timber from the wild. Poverty is a cause and consequence of land degradation and wildlife decimation. According to a recent analysis by the Food and Agricultural Organization of the United Nations (FAO, 1995a), the situation in Africa is becoming increasingly critical as conventional agriculture fails to meet expectations and the capacity of countries to import food is low due to scarcity of foreign exchange resources. As a consequence, one third of the population in Africa is chronically undernourished, and rural populations in many areas of Africa are already compelled by socio-economic stresses to use all the natural resources available. Thus, species that were not normally exploited for food or were eaten only by children, as snacks are now important items in the family diet and/or trade. Africa has many human problems and it will not be realistic to expect the conservation situation to improve unless the needs of human populations are taken into account in the preparation of National Conservation Strategies (IUCN, 1986). The communities surrounding most of the PA are very poor. Hence, use natural resources within the park, some of the members of the community

engage in poaching and encroachment in the park so as to generate income to feed their families.

Many African communities still depend on wild animals and their products, used alone or with herbs, for medication and the treatment of a wide variety of ailments ranging from mental and physical illnesses to ante-natal care, while a wide range of wild animal species have spiritual and cultural associations (Ntiamoa-Baidu, 1987). The contribution of wildlife to food security and nutritional well being in Africa is also manifested in the spiritual, cultural and medicinal values placed on wild animals by rural community. The culture/traditions of the people were the main factors that contribute to the illegal activities it special pot hunting. Most of the rangers reported that Mundari and Bari community were indigenous hunters even before the arrival of the British in the country. Although most of the meat from poached animals was sold through black market, but still the joy of getting their own catch is still in their blood.

5.4.2 Local community Attitude toward Conservation

Conservation in its new form in terms of protected areas such as BNP is alien and has no value to poor people in the rural areas. The poor rural people have a negative attitude towards the protected area unless they are allowed to harvest resources in BNP. It is therefore, not surprising to have a finding that negative attitude towards conservation is one of the major cause of challenges on wildlife law enforcement in BNP. Although law enforcement in PAs has had some effect in curbing illegal exploitation, Rowcliffe *et al.* (2004) showed that species protection laws in the absence of enforcement have no influence on hunters' prey choice patterns.

5.4.3 Lack of Alternative Livelihood Resources for the Local Community

The government of South Sudan is doing all it can to create employment and increase sources of livelihoods to its citizens. However, the rate and pace of providing such alternative sources of livelihoods like creating of enterprise (business) such as ecotourism to support the community do not match the demands of its increasing population. The result that lack of alternative livelihood resources as a major cause of challenges facing BNP was not unexpected. The results also supported some research findings which had shown that poorer households depend totally on wildlife products due to limited access to alternative sources of income, while the more wealthy households mainly use the wildlife resources for larger commercial activities (Wass, 1995). The degree to which such levels of dependence on the wildlife resource results in its degradation, is still debatable.

5.4.4 Increasing a Human Population Surrounding Badingilo National Park

The human population is increasing in many third world countries, and South Sudan is not an exception. Unplanned population growth does not match the available resources and usually puts a heavy pressure on those resources. The result that an increasing population is a major cause of challenges was expected in South Sudan. In the recent past, South Sudan has experienced a high influx of returnees of refugees from all over the world. It is also experiencing a high rate of immigration from neighboring countries seeking economic opportunities. The high population growth in South Sudan, as in most parts of Africa, is claimed to be a major driving force behind environmental degradation. This claim has been supported by the fact that the livelihoods of the majority of the population in such countries are linked to

agricultural production at subsistence level. Therefore, with the growing population, expansion of agriculture has been achieved at the expense of the natural resource base (Hillman, 1982). Thus, they will tend to search for more land to increase and expand their farming activities.

5.4.5 Civil War

South Sudan is still recovering from a long civil war. The consequences of war are normally devastating in terms of lost lives, destroyed property and infrastructure, despoliation of the environment and over-utilization of natural resources. Worse still, consequences are long term and it may take decades to rebuild the economy. In view of the aforesaid, the finding that civil war was a major cause of challenges was expected and war has created a situation in which firearms are easily available, some degree of lawlessness is common among the majority of the population and don't care attitude is also common. To some of the citizens, the new found freedom has been taken as a license to do what one wants as if there was no law. These results concur with those of Rotich, (1997) that as political instability, civil wars and the ready availability of weapons and ammunitions, inadequate human and financial resources, low staff morale, and greed make a deadly recipe for wild animals such as elephants as compared to poachers who have been observed to have better weapons, hence they engage in their poaching activities without fear of being arrested.

5.4.6 Views of Staff from key Park Management

The views of the three categories of park staff in BNP showed that the anti-poaching department agreed that poverty, negative attitude, civil war and lack of alternative livelihood resources were the major causes of challenges on wildlife law enforcement

in BNP. On the other hand, the Informer department agreed on only three major causes of challenges in BNP namely: poverty, lack of alternative livelihood resources and lack of employment. Moreover, the park management reported that poverty, negative attitude toward conservation, increasing population, civil war, traditional cultural practices and lack of alternative livelihood resources as the most common cause of the challenges on wildlife law enforcement in the park.

In summary, poverty and lack of alternative livelihood resources were unanimously mentioned by the three departments as the major causes of challenges facing wildlife law enforcement in the park. These results indicate that there is no significant difference among the views of the three departments and the community around the park on the causes of challenges. As indicated earlier, the finding that poverty is the greatest cause of the challenges in BNP may be explained by the fact that poor communities around BNP require resources for sustenance (Wass, 1995).

The levels of poverty and consequently more illegal activities within BNP are heightened by the high population growth in South Sudan. This claim has been supported by the fact that the livelihoods of the majority of the population in such countries are linked to agricultural production at subsistence level. South Sudan has been in war for over two decades and the consequences of war witnessed have included loss of lives, destroyed property and infrastructure, also despoliation of the environment and over-utilization of natural resources. Worse still, consequences are long term and it may take decades to rebuild the economy.

5.5 Proposed Anti-Poaching Measures to mitigate the effects of challenges of wildlife law enforcement in Badingilo National Park

The result that provision of social funds from the government, NGOs and others were a major anti-poaching measure was surprising. However, this may be explained by the fact that the poachers kill wild animals to meet their basic needs of survival, especially food. When social funds are provided, this diminishes the urge to kill wild animals for food since the social funds can be used to purchase basic needs.

Result that collaboration with the local community was a major anti-poaching measure was equally a surprise. However, this may be explained by the fact that collaboration usually leads to exchange of views between the collaborators. In this case, collaboration between the community and park administration engenders a situation in which the local community is educated on why BNP was established and how they could play a vital role in achieving the parks objectives. This may create awareness, appreciation, understanding and positive action for conservation (Ghai, 1994).

The result that increases in wages and salaries of wildlife law enforcement officers was a mitigating factor to poaching may be explained by the fact that such increases motivate members of staff. Motivated staff is likely to do their work with more dedication and devotion. De-motivated staffs are likely to collude with poachers or become poachers themselves. Motivated staff considers themselves part and parcel of the organization for which they work. Anti-poaching activities involve movement of people (patrols) and sending of messages, and use of equipments such as radios. Improvement of communication would go a long way to increase the success in anti-

poaching operations. It is not a surprise that the results indicate that adopting use of more efficient communication equipment is a major anti-poaching measure. Whereas such equipments may be expensive, the benefits of their use may heavily outweigh their cost.

Involvement of politician and seeking for political support was considered a major anti-poaching measure. This may be explained by the fact that politicians represent people's interests and unless politicians are on the side of the conservationists, it will be difficult to pass laws in favour of anti-poaching. In any case major protected area decisions are political decisions, including establishment of such areas and decision regarding allocation of resources for management and anti-poaching operations. It is therefore, critical to involve politicians in issues relating to anti-poaching activities (Ocha, 2006), in order to enhance political support, good will and funding for protected area management and anti-poaching activities.

Results showed that creating awareness and training was not a major anti-poaching measure and this was unexpected. Awareness creation among the community is expected to lead to lower incidences of poaching. Training through skills upgrading in terms of learning new methods of combating poachers would also be expected to lead to higher success in anti-poaching operations.

5.5.1 Views of Staff from key Park Management

On anti-poaching measures undertaken to mitigate the effect of challenges of wildlife law enforcement, study findings indicated that the anti-poaching department reported that collaboration with local community, provision of social funds from government, NGOs and others, involvement of politicians, increase in the wages and salaries of

employees and adopting more efficient communication equipment as the major anti-poaching measures undertaken to mitigate illegal activities in BNP. The Informer department reported that the major anti-poaching measures undertaken to mitigate illegal activities in BNP are; collaboration with local community, provision of social funds from government, increase wages and salaries of employees and supporting the community by creating enterprise business. Views of the park management showed that collaboration with the local community, provision of social funds from government, involvement of politicians, increase in the wages and salaries of employees, and supporting the community by creating enterprise businesses as the major anti-poaching measures undertaken by the park.

In general, the three departments agreed only on three major anti-poaching measures namely; on collaboration with local community, provision of social funds from government and increase wages and salaries of employees to mitigate illegal activities in BNP. However, the findings of the study indicate that there is no difference among the views of the staff from the three departments. The reason for there being no difference among the views on the anti-poaching measures cases is explained by the fact that due to lack of a comprehensive collaboration network between the three departments, there are varied reports from the field concerning illegal activities within the park. This might be also be explained by the fact that the community around the park is not willing to either solicit or provide vital information about activities in the park to the concerned authorities.

5.5.2 Involvement of the Local Community Adjacent to Badingilo National Park

The study indicated that majority of the officers are not involved in community activities adjacent to the park because communities are not aware about conservation, wildlife officers' job description is not connected to civilians and some of the community members, the community heavily relies on natural resources, poachers are heavily armed hence no civilians are allowed to go near them and they have a negative attitude towards the wildlife forces. It is now internationally recognized that greater community participation in wildlife management can contribute to reducing the over-exploitation of wildlife resources and conservation of environmental resources can only succeed if the social factors, which influence people's interaction with the environment, are addressed. These include access to natural resources, the level of decision making processes and empowerment (Ghai, 1994). These will make communities to consider wildlife as belonging to them and therefore, support its conservation and management.

5.5.3 Measures taken by People around Badingilo National Park when poachers occur or are seen within the Park

Majority of the officers reported that community members do not take measures when they see poachers in the park. Since the historic times, competition for natural resources has been a major cause of conflicts between different groups, classes and nations. There are existing conflicts between the objectives of the conservation programmes and those of the local communities (Salafsky and Wollenberg, 2000). The sense of traditional ownership, responsibility and control of natural resources such as wildlife resources and their benefits by local communities have largely been

ignored. Most communities therefore view government control and management negatively thus making them indifferent to conservation initiatives led by the government. The government also lacks adequate financial and personnel resources to sustainably manage the wildlife resources. As population grows, the pressures on the wildlife resources are increased and this has exacerbated the conflict between the local communities and the government. The conflict between 'resource users' and 'resource conservers' has been the biggest hindrance in conservation efforts (Scott, 1998). Lack of financial resources might lead to low effectiveness of wildlife laws thus increasing encroachment and poaching activities within the park.

5.6 Reasons for involvement or non-involvement of police in enforcing wildlife law in BNP

5.6.1 Reasons for involvement of Police

Findings showed that 42.9% of the respondents were of the view that the police could be involved in enforcing wildlife laws because they help in locating and arresting poachers, they are involved in the prosecution of the offenders in court, that it is government policy and that they cooperate and participate to conserve the natural resources inside the park.

5.6.2 Reasons for non-involvement of Police

Findings showed that 57.1% of the park staff was of the view that the police are not involved in enforcing wildlife law as expected. The main reasons why police are not involved in enforcing wildlife laws were that police deal with civilians not wildlife laws, lack of knowledge on the importance of wildlife, some police officers collaborate with poacher, police have their own specific law which provides for

investigation of a poacher, and there is no police unit in the park. In most cases, police usually enforce the penal code and traffic act. Police would only be involved in the enforcement of wildlife law under situations of emergency in nature and by accident when they have laid road blocks and seize wildlife products, and in situations where there is no trained wildlife personnel to prosecute wildlife cases. However, there have been allegations that their inadequate knowledge on wildlife laws compromises such prosecutions from making proper cases to effect conviction of offenders. Despite the citing of reasons for not involving the police in enforcing wildlife laws, they are a critical component of law enforcement.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Implementation of the existing wildlife laws and not their inadequacy or weakness is a key challenge. Other major challenges include inadequacies in vehicles and equipments, staff strength, food and water for staff. The major causes of challenges to law enforcement was poverty followed by negative attitude towards conservation, lack of alternative livelihood resources, increasing population and civil war.

Badingilo National Park was established for the protection of wild animals and anti-poaching is the major activity of the park staff. The three categories of staff in BNP believed that poaching was the most common illegal activity as most civilians have automatic weapons coupled with widespread poverty. Encroachment in the park for grass, firewood collection and cutting trees for timber by surrounding communities is attributable to poverty and need for wood resources to build houses and source of energy for cooking.

The three wildlife law enforcement arms have different perceptions on several issues of law enforcement suggesting poor or weak collaboration/cooperation and lack of synergy among the departments.

Inadequate staff was also an important challenge due to lack of adequate finances by GOSS to hire more personnel. The government of South Sudan has a limited capacity to employ all staff categories needed in BNP.

The provision of social funds from government, NGOs and other agencies were a major anti-poaching measure. The majority of the officers are not involved in

community activities adjacent to the park because communities are not aware about conservation, wildlife officers job description is not connected to civilians and some of the community members heavily rely on natural resources. The community members do not take effective conservation measures when they see poachers in the park because they have a negative perception of the park.

6.2 Recommendations

More patrol work would help to stop animals from wandering out of the Park into regions where they are more threatened. South Sudan's new system of wildlife patrol and monitoring would be wise to implement in other countries in East Africa that have reasonable governance in order to reduce the poaching of elephants and other large mammals. In addition, to ensure that there is effective patrol by the law enforcers, there is need to increase the number of officers within the three wildlife management departments of BNP. Generally, Southern Sudan has demonstrated that with improved strategies for law enforcement, including shop raids on animal product like ivory, skin etc and monitoring the work of patrol staff in protected areas (which has increased their productivity), wildlife populations can be better secured.

Sustainable and effective protected area management calls for reversals from the normal: for diversity, democracy and decentralization. The vision for conservation presented in this study would establish and develop parks and protected areas with a view to strengthening local livelihood opportunities, and then integrate these measures with nature conservation objectives.

Among other recommendations to strengthen wildlife and natural resources protection are:

- i. Develop comprehensive natural resources conservation programs and strategies that take into consideration the views of the community as well as other important stakeholders, for example, community participation in conservation of wildlife resources.
- ii. Develop capacity building for police agencies on the law and policies on wildlife protection
- iii. Set up human resource development and welfare programs to protect those who take care of wildlife such as health insurance schemes, training programme for wildlife officers, among others.
- iv. Set up monitoring checkpoints and units in Juba airport and river ports such as Mongalla, Gemmeiza, and Nimule border point. This can be effectively enhanced through resource mobilization by the concerned authorities such as the government through the ministry in charge of wildlife management.
- v. Natural resources management and land-use planning are needed in order to balance competing claims and ensure sustainable development by establishing a natural resource management team under ministry of wildlife conservation.
- vi. Establish partnerships for stakeholders' participation in wildlife law enforcement, particularly within the areas under SPLA/ army.
- vii. Establish institutional arrangements with other countries such as Uganda, Democratic Republic of Congo (DRC) and Ethiopia among others, to combat illegal entry and exit of wildlife products, as well as utilization of the laws and strategies of those countries.
- viii. Give judges and magistrates' additional information and training about the wider environmental, social, economic and cultural impacts of wildlife offences and encourage judges and magistrates to use the full range of appropriate penalties

available to them in order to provide a just, consistent and deterrent response to serious wildlife resource offences.

- ix. Liberalize wildlife management outside protected areas by delegating to communities; through training and awareness on the importance of wildlife conservation, as well as to landowners some rights and authority to utilize wildlife for economic benefit, including certain responsibilities and costs of conservations. In addition, MWCT should make greater use of MoUs or similar instruments in land-use planning in order to secure small, valuable wildlife-conservation units by cooperating with individual and group landowners, South Sudan government departments and local-government authorities.
- x. The study was limited to Badingilo National park, thus similar studies should be carried out in other national parks for comparison purposes.

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APPENDICES

Appendix I: List of common species of mammals found in Badingilo National Park

English name	Scientific name
Aardvark (antbear)	<i>Oryceteropus afer</i>
African rabbit	<i>Poelagus marjorita</i>
Baboon	<i>Papio anubis</i>
Beisa oryx	<i>Oryx beisa</i>
Bushbuck	<i>Tragelaphus scriptus</i>
Cane rat	<i>Thryonomys spp</i>
Caracal	<i>Felis caracal</i>
Cheetah	<i>Acinonyx jubatus</i>
Civet-cat	<i>Viverra cevitta</i>
Eland-common	<i>Taurotragus oxys</i>
Elephant	<i>Loxodonta africana</i>
Gazelle-mongalla	<i>Gazella rufifrons albonotata</i>
Giraffe	<i>Giraffa camelopardalis</i>
Grant's gazelle	<i>Gazella granti</i>
Hartebeest-lelwel	<i>Alcelaphus buselaphus</i>
Hyena-spotted	<i>Crocuta crocuta</i>
Jackals	<i>Canis adustus</i>
Leopard	<i>Panthera pardus</i>
Lesser kudu	<i>Tragelaphus imberbis</i>
Lion	<i>Panthera leo</i>
Patas monkey	<i>Erythrocebus patas</i>
vervet monkey	<i>Cercopithecus aethiopicus</i>
Oribi	<i>Ourebia ourebia</i>
Pangolins	<i>Manis gigantean</i>
African crested porcupine	<i>Hystrix cristata</i>

Reedbuck-bohor	<i>Redunca redunca</i>
Roan antelope	<i>Hippotragus equines</i>
Serval-cat	<i>Felis serval</i>
Tiang	<i>Damaliscus lunatus tiang</i>
Warthog	<i>Phacochoerus africanus</i>
Waterbuck	<i>Kobus defassa</i>
White-ear kob	<i>Kobus kob leucotis</i>
Zebra	<i>Equus burchelli</i>

Appendix II: List of common species of birds found in Badingilo National Park

English name	Scientific name
Kori Bustards	<i>Ardeotis kori</i>
Carmine Bee-eaters	<i>Merops nubicus</i>
Yellow-Vented Bulbuls	<i>Pycnonotus barbatus</i>
Crowned crane	<i>Balearica regulorum</i>
Long tail cormorant	<i>Phalacrocorax africanus</i>
White breasted cormorant	<i>Phalacrocorax lucidus</i>
Egyptian sand goose	<i>Alopochen aegyptiaca</i>
Fulvous Tree Duck	<i>Dendrocygna bicolor</i>
Dusky Turtle Dove	<i>Streptopelia lugens</i>
Great Flamingo	<i>Phoenicopterus ruber</i>
Francolin	<i>Clappertons francolin</i>
Crested Guinea fowl	<i>Guttera edouardi</i>
Pelican	<i>Pelecanus rufisceus</i>
Goliath heron	<i>Ardea goliath</i>
Purple heron	<i>Arden purpurea</i>
Squacco heron	<i>Ardeola ralloides</i>
African Green pigeon	<i>Treron calvus</i>
Cattle Egret	<i>Ardeola ibis</i>
<i>Hammer kop</i>	<i>Scopus umbretta</i>
<i>African grey Horn-bill</i>	<i>Tockus nasutus</i>

Lesser Honey guide

Indicator minor

Glossy ibis

Plegadis facinellus

African jacana

Actophilornis africanus

White-Headed Vulture

Trigonoceps occipitalis

Nubian night jar

Caprimulgus nubicus

Ostrich

Struthio camelus

African march owl

Asio capensis

Blacksmith Plover

Vanellus armatus

Half-collared Kingfisher

Alcedo semitorquata

Secretary bird

Sagittarius serpentarius

Little green sunbird

Nectarinia seimundi

Purple-headed glossy starling

Lamprotornis purpureiceps

Orange Weaver

Ploceus aurantius

Cardinal quelea

Quelea cardinalis

Nubian woodpecker

Campethera nubica

Pied crow

Corvus albus

Appendix III: List of common tree and shrub species found in Badingilo

National Park

English name	Scientific name
Paperback thorn	<i>Acacia siebraina</i>
White-thorn acacia	<i>Acacia hockii</i>
Bush-willow	<i>Combretum collinum</i>
Desert date	<i>Balanites aegyptica</i>
Sausage tree	<i>Kigelia Africana</i>
Three-thorn acacia	<i>Acacia Senegal</i>
Black-galled acacia	<i>Acacia malacocephala</i>
Tamarind tree	<i>Tamarindus indica</i>
Christ thorn	<i>Ziziphus spina-christi</i>
Scented-pod acacia	<i>Acacia nilotica</i>
African pan palm	<i>Borrassus aethiopium</i>
Silver cluster-leaf	<i>Terminalia species</i>
Mahogany	<i>Khaya spp</i>
Morning glory	<i>Ipomea spathulata.</i>
Pod mahogany	<i>Afzelia quanzensis</i>
Desert rose	<i>Adenium spp.</i>
Neem	<i>Azadirachta indica</i>
Black ebony	<i>Dalbergia melanoxylon</i>
Flamboyant tree	<i>Delonix regia syn ponsiana</i>
Mulberry	<i>Morus spp.</i>
Guava	<i>Psidium guajava</i>
Frangi pani	<i>Plumeria spp.</i>
Teak	<i>Tectona grandis</i>

Stink wood	<i>Celtis spp</i>
Bell-flowered mimosa	<i>Dichrostachyus cinerea</i>
Kaffir boom	<i>Erythrina spp</i>
Fig	<i>Ficus spp</i>
African ebony	<i>Diospyros mespiliformis</i>
Buffalo thorn/wait-a-bit	<i>Ziziphus spp</i>
White thorn	<i>Acacia seyal</i>
Whistling thorn	<i>Acacia drepanolobium</i>

Appendix IV: Results of the local Community adjacent to BNP

Table 1: Views of Staff from the three departments on Community Involvement in Law Enforcement

Involvement of community	Frequency	Percent
Yes	37	48.1
No	40	51.9
Total	77	100

Table 2: People around Badingilo National Park take Measures when poachers occur or one is seen within the Park

Taken Measures when poachers occur	Frequency	Percent
Yes	31	40.3
No	46	59.7
Total	77	100

Table 3: Community utilizing Wildlife or Natural Resources in BNP

Community utilizing natural resources	Frequency	Percent
Yes	81	96
No	3	4
Total	84	100

Appendix V: Questionnaire for wildlife law enforcement officers (staff of Badingilo National Park)

A) Personal details

- 1. Sex a) Male [] b) Female []
- 2. Age a) 18-34 [] b) 35-54 [] c) >56 []
- 4. Title Rank/Designation
- 5. Department.....
- 6. How long do you have work at Park?
- 7. Marital status a) Married [] b) Single [] c) Widow []
- 8. What is your level of education? a) None/no education [] b) Primary [] c) Secondary [] d) College [] e) University []

Section B Establishment and operation of the Anti- poaching Department.

- 9. How long have you been with the wildlife law enforcement unit at Badingilo National Park?
 - a) 0-1 year b) 1-5 years. c) 6-10 years d) 11-15 years.
 - e). 16-20years f) 21 years and above.

10. Why was the wildlife law enforcement unit in Badingilo National Park established?

.....

.....

.....

.....

.....

11. What are the natural resources available in Badingilo National Park?

(i) Water

(ii) Wild animals'

like.....

(iii) Wild plants/ made plant

like.....

(iv) Grazing land

(v) Forest products e.g. timber etc

(vi) Others

(specify).....

12. a) Are there any illegal activities that threaten natural resources in this area?

Yes () No ()

b) If yes what are these illegal activities (please tick from answers given below)?

i) Poaching

ii) Over grazing

iii) Cutting grass

iv) Cutting trees for timber

v) Collection of firewood

vi) Encroachments in to the Game Reserve.

vii) Others (specify).....

13. What are the causes of the illegal activities on natural resources? (Tick from answers given below)

i) Poverty

ii) Negative attitude toward conservation

iii) Increasing population

iv) Civil war

v) Traditional/ cultural practices

vi) Lack of alternative resources

vii) Others
(specify).....

14. What challenges do you face in enforcing wildlife laws? (Tick from letters given below)

i) Political intervention

ii) Lack of vehicles and equipments

iii) Inadequate staff

iv) Lack of funds

v) Inadequate or weak of laws/policies

vi) Other
(specify).....

15. a) Do these challenges have any effects on the overall objective of the Badingilo National Park?

Yes () No ()

b). If yes explain how?

.....
.....
.....
.....
.....

16. How do you overcome or address the challenges faced in the above?

i) Collaboration with local community

ii) Social for funds from the government, NGOs and other stakeholders

iii) Involvement of politicians/ seeking political support

iv) Others
(specify).....

17. a) Do you involve police in enforcing wildlife laws?

Yes. () No.()

b) If yes which specific areas do you involve them?

.....
.....
.....
.....

c) If no, explain why they are not involved?

.....
.....
.....
.....

18. a)Do you involve local communities adjacent to Badingilo National Park in enforcing wildlife laws?

Yes. () No. ()

b) If yes what are the advantages or disadvantages of involving them?

i) Advantages

.....
.....
.....
.....

ii) Disadvantages

.....
.....
.....

c) If no, explain why they are not involved?.....
.....
.....
.....

19. a) Do people around Badingilo National Park take measures when poachers occur or one seen within the Park?

Yes []

No []

b) If no, go to question 20

c) If yes, what are the measures? (Choose from answers given below)

i) Report to the park authority

ii) Catch them

iii) Report to ant – poaching unit at Badingilo National Park

vi) Other measures taken

(specify).....

20. If a) or c) in 19 above, how often do they react?

a) Immediately

b) Average

c) Late

d) Do not show up

21. In your opinion, what should be done to minimize, stop or regulate poaching?

.....
.....
.....

Appendix VI: Questionnaires for local Community

Section A: Personnel Information

1. Sex a) Male b) Female
2. Age (in years) i) 18-34 years ii) 35-54 years iii) >56 years
3. Marital status a) Married b) Single c) Widow

4. a) Have you ever utilized wildlife or natural resources from Badingilo National Park?

Yes No

b). If no, why?

.....

.....

.....

c). If yes, indicate the uses? (choose from answers given below)

i) Grazing in reserve

ii) Cutting grass/timber

iii) Collecting of firewood

iv) Water

v) Medicinal plants

vi) Others

(specify).....

5. a) Are you involved in conservation of natural resources in this area?

Yes No

b). If yes, how are you involved?

i).....

.....

ii).....

.....

c) .If no, give reasons why you are not involved?

- i).....
-
-

Appendix VII: Photographs taken during the study



(Source, Author 2012)

Plate 1: The Wildlife habitat in Badingilo National Park



(Source, Author 2012)

Plate 2: Community Members in Badingilo National Park.



(Source, Author 2012)

Plate 3: Group discussion with community members around Badingilo National Park



(Source, Author 2012)

Plate 4: Anti-poaching force (Patrol team ready for patrolling in the Park).



(Source, Author 2012)

Plate 5: Illegal Arms and Reedbuck Confiscated From Poachers in the Park



(Source, Author 2012)

Plate 6: Illegal activities inside the National Park